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January 31, 1980
FIVE DOLLARS

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Tractor and equipment specifications
Hydraulic components data
Nebraska test reports
Full contents page A2

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Implement&Tractor

The Business Magazine of the Farm and Industrial Equipment Industry

64 th annual edition
Implement & Tractor

ADVERTISER'S INDEX B191

ENGINES:

Engines Under 45 Cubic Inches Displacement A102
Engines, 45 Cubic Inches Displacement and Larger A114

EQUIPMENT:

Backhoes B137
Combines, Pull Type B10
Combines, Self-Propelled B1
Corn Shellers B76
Crop Drying Equipment B158
Elevators, Auger Type B149
Elevators, Belt and Chain Types B142
Feed Grinder-Mixers B177
Fertilizer Spreaders, Broadcast Type B110
Flail Cutters B60
Forage Blowers B72
Forage Harvesters, Cylinder and Flywheel Types B69
Forage Harvesters, Flail Cutter Type B68
Hay Balers, Conventional Size Bale B38
Hay Balers, Large Size Bale B42
Hay Mowers, Drum and Disk Types B36
Hay Stacking Wagons (Loose Hay) B44
Hay Tub Grinders B179
Herbicide Applicators, Low Volume B94
High Pressure Washers B181
Loaders, Compact Skid Steer and Articulated B129
Loaders, Tractor Front Mounted Farm Type B117
Mower-Conditioners, Cutterbar Pull Type .. B34
Mower-Conditioners, Self-Propelled B31
Power Harrows B107
Rotary Cutters B45
Rotary Tillers B102
Sprayers, Air Mist B96
Sprayers, Hydraulic B77
Wagons, Auger Unloading B166
Wagons, Feed Mixer B170
Wagons, Forage and Cross Conveyor B174
Wagons, Hay Stacking B44

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Redbook Issue

Windrowers, Pull Type B34
Windrowers, Self-Propelled B31

HYDRAULIC COMPONENTS:

Hydraulic Control Valves A222
Hydraulic Couplings, Self-Sealing A235
Hydraulic Cylinders A229
Hydraulic Motors A208
Hydraulic Pumps A198
Hydraulic Pump and Valve Packages A221

NEBRASKA TRACTOR TESTS:

Explanation of Test Reports A147
Index of 1979 Tractor Test Reports A146
The Nebraska Tractor Test Law A146
Ten-Year Summary of Test Reports, 1970-1979 .... A190

TIRES:

Liquid Ballast Table for Agricultural Tires . A244
Tire Air Pressure, Load and Tangential (Drawbar) Pull Capacity Charts A246

TRACTORS:

Agricultural Crawler Tractors A8
Agricultural Wheel Type
  Four-Wheel Drive A85
  Two-Wheel Drive A12
  Two-Wheel Drive with Front Wheel Drive Opt. A67
Industrial Wheel Type Tractors A99
ROPS Tractor Cabs A95
Tractor Engine Valve Spring Specifications A144
Tractor Serial Numbers A260
Tractor PTO HP & Tune-Up Specs A136

TRANSPORT EQUIPMENT GROUND LOADING

Field Implement Transport B28
Gooseneck Trailers B22
Pull Trailers (4T & Over) B14
Semi Trailers B18
Truck Flatbeds B27

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Nebraska Tests Section

Tractor Make & Model	Test No.	Page No.
ALLIS CHALMERS		
7045 Diesel	1308	A160
J I CASE		
2090 Manual Diesel	1304	A156
2290 Manual Diesel	1296*	A148
2290 Powershift Diesel	1297*	A149
2390 Powershift Diesel	1302	A154
2590 Powershift Diesel	1303	A155
4490 Diesel	1328	A182
4690 Diesel	1329	A183
4890 Diesel	1330	A184
JOHN DEERE		
1050 Diesel	1327	A180
8440 Diesel	1323	A176
8640 Diesel	1324	A177
DEUTZ		
DX-90 Diesel	1305	A157
DX-110 Diesel	1306	A158
DX-160 Diesel	1307	A159
FORD		
1700 Diesel	1325	A178
1900 Diesel	1326	A179
TW-10 Diesel	1301	A153
TW-20 Diesel	1300	A152
TW-30 Diesel	1299	A151
INTERNATIONAL HARVESTER		
484 Utility Diesel	1312	A164
584 Utility & Rowcrop	1313	A165
684 Utility & Rowcrop	1314	A166
784 Rowcrop Diesel	1315	A167
Hydro 84 Diesel	1316	A168
3388 Diesel	1319	A172
3588 Diesel	1320	A173
4786 Diesel	1317	A170
LONG		
360 Diesel	1298	A150
MASSEY-FERGUSON		
2675, 8-Speed	1321	A174
2675, 24 Speed	1309	A161
2705, 8-Speed	1322	A175
2705, 24-Speed	1310	A162
2745, 8 & 24-Speed	1311	A163
VERSATILE		
555 Diesel	1331	A185
875 Diesel	1332	A186
WHITE		
4-210 Field Boss	1318	A171

*1978 Test Schedule

The Nebraska Tractor Test Law

. **Purpose of the Law**—The Nebraska Tractor Test Law originated in 1919 for the purpose of verifying advertising claims on tractors offered for sale to Nebraska farmers.

Its position as the only independent test laboratory in the United States devoted to the evaluation of tractor performance proved of unique value to the industry. The Agricultural Tractor Test Code used in the Nebraska Tests was developed with the approval and assistance of the American Society of Agricultural Engineers and the Society of Automotive Engineers, and is revised and updated periodically as the need arises. The Test Code (ASAE S209.4 or SAE J708c) is published in the ASAE Yearbook and SAE Handbook.

. **Provisions of the Law**—Stated briefly, the Nebraska Tractor Test Law provides:

That a stock unit of each agricultural tractor model sold in Nebraska shall be tested and passed upon by a board of three engineers under the supervision and direction of the University of Nebraska. Each tractor must be certified as a stock model and will be equipped with the common power consuming accessories. An official representative of the manufacturer is present during the test to see that the performance meets company standards.

The Department of Agriculture shall deny to any manufacturer the right to do business in the State on complaint of two or more bona fide customers that the company has failed to maintain an adequate service station with a full supply of replacement parts within the state and within reasonable distance of customers.

The law further states that it shall be unlawful to publish excerpts from any official test in advertising material without publishing the entire report.

The provisions of the Nebraska Test Law do not apply to any tractor the engine of which develops less than 20 hrosepower; or to tractors manufactured, sold and used for heavy construction when identical units are not sold and used for agricultural purposes.

Explanation of Test Report

Individual copies of any test report, annual summary booklets or annual subscription (at $3.50) are available. For complete information write to **Department of Agricultural Engineering, University of Nebraska—Lincoln, Lincoln, Nebraska 68583.**

GENERAL CONDITIONS

Each tractor tested is certified by the manufacturer to be a stock model. Tractor is equipped with all common power consuming accessories (power steering, lift pump, alternator, etc.) normally sold. Accessories may be disconnected only when the means for disconnecting can be reached from operator's station. Ballast can be added if recommended by the manufacturer and in amounts allowed under warranty policy. Static tire loads and inflation pressures must conform to standards established by the Tire & Rim Association.

PREPARATION FOR TESTS

The crankcase is drained and refilled with a weighed amount of new oil conforming to specifications in the operator's manual. The operator's manual is also used in selecting the proper fuel and for routine lubrication and maintenance operations. A time clock is installed to record total running time. A 12-hour run-in period under varying drawbar load is made on the test track under the direction of the manufacturer's representative. Preliminary adjustments can be made at this time. Parts added or removed under this or later runs are noted on the test report.

The tractor is equipped with approximately the amount of added ballast to be used during the drawbar test runs.

PTO PERFORMANCE

All PTO tests are made by connecting tractor PTO shaft to a dynamometer. During a preliminary power take-off run, the manufacturer's representative may make fuel, injection (ignition) timing and governor control settings. These settings must be maintained for remainder of tests. PTO test area is maintained at approximately 75°F. and tests are only run at 28.7 in. Hg or higher barometric pressure at test sight (1100 ft. altitude). Standard diesel fuel is heated to operating temperature characteristic of fuel system under test and maintained at that temperature. Fuel operating temperature is listed in "REMARKS" portion of each test.

Maximum Power and Fuel Consumption. Maximum power is tested for two hours at rated engine speed. Fuel consumption in gallons per hour, lbs per hp hour and hp-hr per gallon are noted and recorded. If standard PTO speed differs from rated engine speed a second (one hour) test run is made at PTO Rated Speed and the results recorded.

Varying Power and Fuel Consumption. Six 20-minute tests are made at (1) 85% of dynamometer torque at maximum power, (2) minimum dynamometer torque, (3) ½ of the 85% torque, (4) maximum power, (5) ¼ of the 85% torque and (6) ¾ of the 85% torque. This test is designed to approximate the varying load a tractor is subjected to during normal operation, and the fuel consumption figures given on the "Average" (Av) line closely indicate expected fuel use. Crankshaft speed variations also give some indication of governor performance.

DRAWBAR PERFORMANCE

Drawbar tests for pneumatic tires are performed on a concrete test course containing two 500-foot straight level areas and two 180 degree turns with a minimum radius of 50 feet. All engine adjustments are the same as those used in power take-off tests. Tire pressures are set at proper level, weights are added or removed and the tractor front, rear and total weight are taken and recorded.

Varying Power and Fuel Consumption. Maximum drawbar performance tests and varying power tests are made in the gear selected by the manufacturer. Slip of drive wheels must not exceed 15%, safe stability limits of the tractor must not be exceeded and 20% of static front end weight must remain on front wheels throughout the test.

The drawbar pull is set in four different test runs as follows: (1) Maximum power in selected gear; (2) 75% of pull at maximum power (10 hour test); (3) 50% of pull at maximum power; and (4) 50% of pull at reduced engine speed. In the final (50%) run, load and ground speed are maintained at levels set in previous run but transmission is shifted to a higher travel speed and crankshaft speed is reduced.

Maximum power in Selected Gears. In this run all forward gears are tested between 15% drive wheel slip and 10 miles per hour. This represents a minor change from earlier tests in which six manufacturer selected gears were tested, one of which could exceed 8 mph.

Lugging Ability in Rated Gear. The first run in this test is made at 100% maximum pull in the gear selected by the manufacturer. In each succeeding run, drawbar load is increased to reduce ground speed 10%, then drawbar pull, horsepower and drive wheel slip is recorded. The test ends when ground speed is reduced by 50% or when equipment limitations halt the test.

SOUND MEASUREMENT

Sound is recorded during each of the Varying Power drawbar tests, as the tractor travels on a straight section of the course. The dB(A) sound level is obtained by a microphone located near the right ear of the operator. Bystander sound readings are taken 25 feet from side of tractor during maximum throttle.

An increase of 10 dB(A) will approximately double the loudness to the human ear.

NEBRASKA TRACTOR TEST 1296—CASE 2290 MANUAL DIESEL

POWER TAKE-OFF PERFORMANCE

Hp	Crankshaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—998 rpm)								
128.80	2100	8.870	0.476	14.52	192	60	75	28.540
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
112.45	2158	8.040	0.495	13.99	190	60	75	......
0.00	2310	2.723	.....	.....	177	60	74	......
58.27	2241	5.282	0.627	11.03	183	60	74	......
129.26	2100	8.903	0.476	14.52	193	60	75	......
29.60	2274	3.981	0.930	7.44	180	60	76	......
86.38	2208	6.748	0.540	12.80	186	61	74	......
Av 69.33	2215	5.946	0.593	11.66	185	60	75	28.537

DRAWBAR PERFORMANCE

Hp	Drawbar pull lbs	Speed miles per hr	Crankshaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cooling med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 5th (3L) Gear											
106.07	7489	5.31	2099	5.42	8.510	0.555	12.46	185	36	40	28.496
75% of Pull at Maximum Power—Ten Hours 5th (3L) Gear											
87.24	5791	5.65	2202	4.02	7.437	0.590	11.73	181	30	33	29.241
50% of Pull at Maximum Power—Two Hours 5th (3L) Gear											
60.06	3870	5.82	2238	2.77	5.963	0.687	10.07	181	40	44	28.855
50% of Pull at Reduced Engine Speed—Two Hours 6th (3H) Gear											
59.89	3857	5.82	1778	2.69	4.824	0.557	12.41	180	39	46	28.875
MAXIMUM POWER IN SELECTED GEARS											
82.69	12635	2.45	2191	14.99	2nd (1H) Gear			180	30	33	29.210
103.81	11813	3.30	2100	12.05	3rd (2L) Gear			184	35	38	28.500
108.76	9285	4.39	2100	6.78	4th (2H) Gear			185	36	39	28.490
109.36	7714	5.32	2100	5.30	5th (3L) Gear			185	36	40	28.490
108.57	6013	6.77	2099	4.17	6th (3H) Gear			185	35	37	28.500

LUGGING ABILITY IN RATED GEAR 5th (3L)						
Crankshaft Speed rpm	2100	1888	1682	1472	1255	1046
Pounds Pull	7714	8479	9166	9426	9398	8680
Increase in Pull %	0	10	19	22	22	13
Horsepower	109.36	107.35	102.70	92.01	78.30	60.62
Miles Per Hour	5.32	4.75	4.20	3.66	3.12	2.62
Slip of Drivers %	5.30	5.90	6.49	6.78	6.78	6.34

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power 2 Hours	86.0
75% of Pull at Max. Power 10 Hours	85.5
50% of Pull at Reduced Engine Speed 2 Hours	84.5
Bystander in 8th (4H) gear	87.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi	Four 18.4-38; 8; 12	Four 18.4-38; 8; 12
Ballast	—Liquid (each)	1195 lb	None
	Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi	Two 11.00-16; 8; 40	Two 11.00-16; 8; 40
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	120 lb	None
Height of drawbar		19 in	19 in
Static weight with operator—rear		11950 lb	9560 lb
	front	3450 lb	3210 lb
	total	15400 lb	12770 lb

Department of Agricultural Engineering
Dates of Test: November 7, 1978 to January 4, 1979

Manufacturer: J I Case Company, 700 State Street, Racine, Wisconsin 53404

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 50.4 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8309 **Fuel weight** 6.918 lbs/gal **Oil SAE** 30 **API service classification** SE-CD **To motor** 4.245 gal **Drained from motor** 4.013 gal **Transmission and final drive lubricant** Case TFD fluid **Total time engine was operated** 41.5 hours

ENGINE **Make** Case Diesel **Type** 6 cylinder vertical with turbocharger **Serial No.** 10160542 **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.625" x 5.0" **Compression ratio** 15.75 to 1 **Displacement** 504 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** two full flow cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium temperature control** two thermostats

CHASSIS: **Type** standard with duals **Serial No.** 8836198 **Tread width** rear 60" to 124" front 60" to 88" **Wheel base** 104" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 30.3" Vertical distance above roadway 38.3" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** first 2.2 second 2.7 third 3.7 fourth 4.7 fifth 5.2 sixth 6.5 seventh 11.3 eighth 15.6 reverse 2.7, 4.5, 6.3, 13.7 **Clutch** multiple wet disc hydraulically operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 145" left 145" (on concrete surface without brake) right 163" left 163" **Turning space diameter** (on concrete surface with brake applied) right 300" left 300" (on concrete surface without brake) right 341" left 341" **Power take-off** 998 rpm at 2100 engine rpm and 534 rpm at 2100 engine rpm

REPAIRS AND ADJUSTMENTS: No repairs or adjustments

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump was 175°F. Five gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1296.

LOUIS I. LEVITICUS
Engineer-in Charge
G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1297—CASE 2290 POWERSHIFT DIESEL

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—998 rpm)								
129.08	2100	8.890	0.476	14.52	203	55	75	29.267
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
113.58	2174	8.257	0.503	13.76	198	56	76	......
0.00	2326	2.797	......	......	182	54	74	......
59.04	2260	5.390	0.632	10.95	190	56	76	......
129.20	2100	8.942	0.479	14.45	203	58	77	......
29.80	2292	4.072	0.945	7.32	184	56	74	......
86.83	2220	6.834	0.545	12.70	193	57	77	......
Av 69.74	**2228**	**6.049**	**0.600**	**11.53**	**192**	**56**	**76**	**29.227**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 8th (3I) Gear											
109.21	6556	6.25	2100	4.46	8.637	0.547	12.65	192	35	44	28.675
75% of Pull at Maximum Power—Ten Hours 8th (3I) Gear											
87.98	4951	6.66	2219	3.51	7.737	0.608	11.37	187	33	34	29.056
50% of Pull at Maximum Power—Two Hours 8th (3I) Gear											
59.86	3273	6.86	2252	2.17	6.125	0.708	9.77	186	32	36	29.185
50% of Pull at Reduced Engine Speed—Two Hours 10th (4L) Gear											
60.21	3299	6.84	1473	2.25	4.644	0.534	12.97	185	32	36	29.165
MAXIMUM POWER IN SELECTED GEARS											
97.25	12749	2.86	2152	14.69	4th (2L) Gear			191	36	42	28.660
110.81	10346	4.02	2098	7.69	5th (2I) Gear			192	36	44	28.660
111.65	9132	4.58	2098	6.54	6th (3L) Gear			192	37	45	28.670
110.89	8075	5.15	2099	5.44	7th (2H) Gear			192	37	45	28.670
111.68	6702	6.25	2099	4.24	8th (3I) Gear			192	36	45	28.670
111.54	5297	7.90	2100	3.31	9th (3H) Gear			192	37	45	28.660
108.36	4182	9.72	2100	2.61	10th (4L) Gear			192	37	45	28.660

LUGGING ABILITY IN RATED GEAR 8th (3I)						
Crankshaft Speed rpm	2099	1886	1682	1473	1259	1039
Pounds Pull	6702	7353	8059	8349	8279	7797
Increase in Pull %	0	10	20	25	24	16
Horsepower	111.68	109.55	106.48	96.30	81.63	63.68
Miles Per Hour	6.25	5.59	4.95	4.33	3.70	3.06
Slip of Drivers %	4.24	4.69	5.44	5.74	5.44	5.29

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power 2 Hours	78.0
75% of Pull at Max. Power 10 Hours	76.5
50% of Pull at Max. Power 2 Hours	76.0
50% of Pull at Reduced Engine Speed 2 Hours	74.0
Bystander in 12th (4H) gear	89.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi	Four 18.4-38; 8; 12	Four 18.4-38; 8; 12
Ballast	—Liquid (each inner)	965 lb	None
	Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi	Two 11.00-16; 8; 40	Two 11.00-16; 8; 40
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	105 lb	None
Height of drawbar		19 in	19 in
Static weight with operator	—rear	12250 lb	10320 lb
	front	3590 lb	3380 lb
	total	15840 lb	13700 lb

Department of Agricultural Engineering
Dates of Test: November 9, 1978 to January 4, 1979

Manufacturer: J I Case Company, 700 State Street, Racine, Wisconsin 53404

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 50.4 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8309 **Fuel weight** 6.918 lbs/gal **Oil SAE** 30 **API service classification** SE-CD **To motor** 4.281 gal **Drained from motor** 4.000 gal **Transmission and final drive lubricant** Case TFD fluid **Total time engine was operated** 46.0 hours

ENGINE Make Case Diesel **Type** 6 cylinder vertical with turbocharger **Serial No.** 10159921 **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.625" x 5.0" **Compression ratio** 15.75 to 1 **Displacement** 504 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** two full flow cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium temperature control** two thermostats

CHASSIS: Type standard with duals **Serial No.** 8835688 **Tread width** rear 60" to 124" front60" to 88" **Wheel base** 104" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 29.4" Vertical distance above roadway 40.6" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (3) range operator controlled powershift **Advertised speeds mph** first 1.9 second 2.5 third 3.2 fourth 3.2 fifth 4.3 sixth 4.9 seventh 5.4 eighth 6.5 ninth 8.1 tenth 9.9 eleventh 13.2 twelfth 18.1 reverse 3.2, 5.4, 8.1 **Clutch** multiple wet disc hydraulically operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 145" left 145" (on concrete surface without brake) right 163" left 163" **Turning space diameter** (on concrete surface with brake applied) right 300" left 300" (on concrete surface without brake) right 341" left 341" **Power take-off** 998 rpm at 2100 engine rpm and 534 rpm at 2100 engine rpm.

REPAIRS AND ADJUSTMENTS: Before sound tests, it was necessary to replace a hydraulic hose beneath tractor cab.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 194°F. Seven gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1297.

LOUIS I. LEVITICUS
Engineer-in Charge
G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1298—LONG 360 DIESEL 6-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—659 rpm)								
36.16	2400	2.534	0.488	14.27	196	56	75	29.225
Standard Power Take-off Speed (540 rpm)—One Hour								
31.06	1966	2.156	0.484	14.41	193	57	74	29.265
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
31.62	2470	2.162	0.476	14.63	184	58	74	......
0.00	2542	0.775	.....	.....	170	57	73	......
16.09	2512	1.404	0.608	11.46	172	58	74	......
36.32	2400	2.562	0.491	14.18	194	58	77	......
8.09	2524	1.068	0.920	7.57	171	59	74	......
23.92	2491	1.727	0.503	13.85	178	60	76	......
Av 19.34	**2490**	**1.616**	**0.582**	**11.97**	**178**	**58**	**75**	**29.333**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 4th Gear											
31.06	2239	5.20	2401	5.82	2.494	0.559	12.45	183	47	54	28.970
75% of Pull at Maximum Power—Ten Hours 4th Gear											
25.20	1726	5.48	2485	4.22	2.078	0.574	12.13	176	40	46	28.943
50% of Pull at MAXIMUM Power—Two Hours 4th Gear											
17.68	1186	5.59	2511	3.25	1.687	0.665	10.48	175	39	43	29.105
50% of Pull at Reduced Engine Speed—Two Hours 5th Gear											
17.68	1182	5.61	1393	3.22	1.364	0.537	12.97	175	45	52	29.080
MAXIMUM POWER IN SELECTED GEARS											
17.50	4808	1.36	2511	14.94		1st Gear		175	36	39	29.150
29.11	4590	2.38	2400	14.22		2nd Gear		181	48	56	28.970
30.71	2852	4.04	2398	7.40		3rd Gear		184	49	58	29.000
31.91	2300	5.20	2401	5.85		4th Gear		183	48	56	29.020
30.13	1167	9.68	2399	2.98		5th Gear		183	48	57	28.990

LUGGING ABILITY IN RATED GEAR 4th

Crankshaft Speed rpm	2401	2160	1916	1696	1442	1199
Pounds Pull	2300	2331	2374	2563	2577	2532
Increase in Pull %	0	1	3	11	12	10
Horsepower	31.91	29.03	26.23	24.94	21.28	17.41
Miles Per Hour	5.20	4.67	4.14	3.65	3.10	2.58
Slip of Drivers %	5.85	6.08	6.08	6.54	6.77	6.77

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power 2 Hours	100.0
75% of Pull at Max. Power 10 Hours	98.0
50% of Pull at Max. Power 2 Hours	97.0
50% of Pull at Reduced Engine Speed 2 Hours	91.5
Bystander in 6th gear	88.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi	Two 14.9-28; 4; 14	Two 14.9-28; 4; 14
Ballast	—Liquid (each)	600 lb	None
	Cast Iron (each)	365 lb	None
Front Tires	—No., size, ply & psi	Two 7.50-16; 6; 40	Two 7.50-16; 6; 40
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	None	None
Height of drawbar		18.5 in	18.5 in.
Static weight with operator	—rear	4820 lb	2890 lb
	front	1590 lb	1590 lb
	total	6410 lb	4480 lb

Department of Agricultural Engineering
Dates of Test: March 13-20, 1979

Manufacturer: Universal Tractor Brasov (UTB), Brasov, Romania

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8368 **Fuel weight** 6.967 lbs/gal **Oil SAE** 10W30 **API service classification** SE-CC **To motor** 1.719 gal **Drained from motor** 1.554 gal **Transmission and final drive lubricant** 20W40 **Total time engine was operated** 38.0 hours

ENGINE Make Universal Tractor Brasov (UTB) Diesel **Type** 3 cylinder vertical **Serial No.** 115858 **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 3.74" x 4.33" **Compression ratio** 17.0 to 1 **Displacement** 143 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** oil bath with centrifugal precleaner **Oil filter** one full flow cartridge **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium temperature control** thermostat

CHASSIS: Type standard **Serial No.** 592730 **Tread width** rear 47.3" to 74.8" front50.4" to 77.5" **Wheel base** 75" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 26.6" Vertical distance above roadway 26.2" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** first 1.4 second 2.6 third 4.1 fourth 5.2 fifth 9.3 sixth 14.6 reverse 2.1, 7.4 **Clutch** two dry discs operated by foot pedal **Brakes** band and drum operated by two foot pedals which can be locked together and hand lever **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 109" left 109" (on concrete surface without brake) right 124" left 124" **Turning space diameter** (on concrete surface with brake applied) right 223" left 223" (on concrete surface without brake) right 253" left 253" **Power take-off** 540 rpm at 1966 engine rpm.

REPAIRS AND ADJUSTMENTS: During ten hour test a fuel injection line developed a leak. The line was replaced and test rerun.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump was 151°F. Five gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1298.**

LOUIS I. LEVITICUS
Engineer-in Charge
G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1299—FORD TW-30 DIESEL 16-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1147 rpm)								
163.28	2200	10.351	0.442	15.77	189	59	75	28.650
Standard Power Take-off Speed (1000 rpm)—One Hour								
157.04	1918	9.373	0.416	16.76	189	59	75	28.685
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
153.00	2428	10.507	0.478	14.56	188	59	75	......
0.00	2467	3.096	.....	.....	183	58	74	.....
77.17	2448	6.640	0.599	11.62	185	59	76	......
163.58	2200	10.416	0.444	15.70	188	60	78	......
38.69	2454	4.728	0.851	8.18	183	58	74	......
115.07	2432	8.453	0.512	13.61	186	59	75	......
Av 91.25	**2405**	**7.307**	**0.558**	**12.49**	**186**	**59**	**75**	**28.710**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 8th (5PD) Gear											
142.21	10101	5.28	2200	5.04	10.406	0.510	13.67	190	49	51	28.270
75% of Pull at Maximum Power—Ten Hours 8th (5PD) Gear											
121.22	7672	5.93	2440	3.82	9.635	0.554	12.58	186	37	42	28.884
50% of Pull at Maximum Power—Two Hours 8th (5PD) Gear											
82.63	5138	6.03	2450	2.45	7.661	0.646	10.79	185	35	39	29.125
50% of Pull at Reduced Engine Speed—Two Hours 11th (6PD) Gear											
82.34	5116	6.03	1587	2.37	5.634	0.477	14.62	184	38	44	29.085
MAXIMUM POWER IN SELECTED GEARS											
118.60	16553	2.69	2423	14.50	3rd (2PD) Gear			188	34	37	29.130
134.95	15817	3.20	2199	10.85	4th (3PD) Gear			189	43	51	28.740
135.17	15339	3.30	2199	9.86	5th (2DD) Gear			189	43	51	28.750
139.16	12064	4.33	2201	6.50	6th (3DD) Gear			188	43	51	28.750
141.74	11813	4.50	2201	6.11	7th (4PD) Gear			189	43	51	28.750
143.47	10211	5.27	2199	5.24	8th (5PD) Gear			188	43	51	28.770
140.91	8977	5.89	2199	4.52	9th (4DD) Gear			189	42	50	28.740
143.21	7812	6.87	2201	3.78	10th (5DD) Gear			189	42	50	28.730
144.17	6499	8.32	2200	3.04	11th (6PD) Gear			188	42	50	28.730

LUGGING ABILITY IN RATED GEAR 8th (5PD)

Crankshaft Speed rpm	2199	1983	1762	1541	1315	1095
Pounds Pull	10211	11177	11998	12172	11441	9828
Increase in Pull %	0	9	18	19	12	-4
Horsepower	143.47	140.62	133.32	118.07	95.26	68.81
Miles Per Hour	5.27	4.72	4.17	3.64	3.12	2.63
Slip of Drivers %	5.24	5.79	6.26	6.42	6.11	5.16

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power 2 Hours	80.0
75% of Pull at Max. Power 10 Hours	82.0
50% of Pull at Max. Power 2 Hours	81.5
50% of Pull at Reduced Engine Speed 2 Hours	78.5
Bystander in 16th (8DD) gear	90.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi	Four 20.8-38; 10; 16	Four 20.8-38; 10; 16
Ballast	—Liquid (each inner)	1522 lb	None
	Cast Iron (each)	500 lb	None
Front Tires	—No., size, ply & psi	Two 14L-16.1; 8; 36	Two 14L-16.1; 8; 36
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	80 lb	None
Height of drawbar		24.5 in	24.5 in
Static weight with operator	—rear	15090 lb	10045 lb
	front	4740 lb	4580 lb
	total	19830 lb	14625 lb

Department of Agricultural Engineering
Dates of Test: March 27 to April 11, 1979

Manufacturer: Ford Motor Co.—Ford Tractor Oper., 2500 E. Maple Rd., Troy, Michigan 48084

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to** 60°/60° 0.8368 **Fuel weight** 6.967 lbs/gal **Oil SAE** 30 **API service classification** SB/SE-CA/CD **To motor** 4.273 gal **Drained from motor** 4.184 gal **Transmission and final drive lubricant** Ford M2C-53-A **Total time engine was operated** 39.5 hours.

ENGINE Make Ford Diesel **Type** six cylinder vertical with turbocharger and air-to-air intercooler **Serial No.** *M347454* **Crankshaft** lengthwise **Rated rpm** 2200 **Bore and stroke** 4.4" x 4.4" **Compression ratio** 15.6 to 1 **Displacement** 401 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** two full flow paper cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: Type standard with duals **Serial No.** C580929 **Tread width** rear 60.0" to 112.0" front 60.0" to 84.0" **Wheel base** 110.5" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 37.4" Vertical distance above roadway 43.6" Horizontal distance from center of rear wheel tread 0.2" to the left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled power shift **Advertised speeds mph** first 1.8 second 2.4 third 2.8 fourth 3.6 fifth 3.6 sixth 4.6 seventh 4.8 eighth 5.5 ninth 6.1 tenth 7.1 eleventh 8.5 twelfth 10.8 thirteenth 11.0 fourteenth 13.8 fifteenth 14.4 sixteenth 18.4 reverse 2.0, 2.6, 6.0, 7.7 **Clutch** single dry disc operated by foot pedal **Brakes** power assisted double wet disc operated hydraulically by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 161" left 164" (on concrete surface without brake) right 184" left 185" **Turning space diameter** (on concrete surface with brake applied) right 340" left 346" (on concrete surface without brake) right 386" left 388" **Power take-off** 1000 rpm at 1918 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump was 161°F. Nine gears were chosen between 15% and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1299.

LOUIS I. LEVITICUS
Engineer-in Charge
G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1300—FORD TW-20 DIESEL
16-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1146 rpm)								
135.60	2199	8.934	0.459	15.18	192	57	75	28.897
Standard Power Take-off Speed (1000 rpm)—One Hour								
131.43	1918	8.105	0.430	16.22	190	57	75	28.940
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
123.84	2364	8.827	0.497	14.03	190	58	76	......
0.00	2446	2.971	.....	.....	186	56	74	......
63.10	2410	5.848	0.646	10.79	186	57	76	......
138.19	2200	9.038	0.456	15.29	192	57	74	......
31.91	2426	4.289	0.936	7.44	186	56	74	......
93.82	2386	7.307	0.543	12.84	188	58	76	......
Av 75.14	**2372**	**6.380**	**0.592**	**11.78**	**188**	**57**	**75**	**28.977**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 8th (5PD) Gear											
116.64	8795	4.97	2201	5.20	8.917	0.533	13.08	193	59	75	28.580
75% of Pull at Maximum Power—Ten Hours 8th (5PD) Gear											
98.46	6782	5.44	2379	3.92	8.181	0.579	12.04	189	33	38	29.116
50% of Pull at Maximum Power—Two Hours 8th (5PD) Gear											
67.50	4533	5.58	2412	2.78	6.692	0.691	10.09	190	31	33	29.045
50% of Pull at Reduced Engine Speed—Two Hours 11th (6PD) Gear											
67.58	4537	5.59	1561	2.70	4.808	0.496	14.06	188	32	34	29.040
MAXIMUM POWER IN SELECTED GEARS											
94.00	14155	2.49	2392	14.94	3rd (2PD) Gear			193	27	29	19.120
112.63	14052	3.01	2201	11.41	4th (3PD) Gear			194	58	74	28.600
113.64	13710	3.11	2200	10.15	5th (2DD) Gear			195	58	73	28.600
116.28	10700	4.08	2200	6.50	6th (3DD) Gear			194	56	70	28.630
119.61	10590	4.24	2200	6.50	7th (4PD) Gear			194	56	70	28.630
119.30	8998	4.97	2202	5.09	8th (5PD) Gear			193	52	63	28.670
118.60	8015	5.55	2199	4.64	9th (4DD) Gear			195	57	71	28.630
121.37	7032	6.47	2198	3.87	10th (5DD) Gear			194	57	71	28.630
121.47	5804	7.85	2200	3.17	11th (6PD) Gear			194	57	71	28.620
118.73	4476	9.95	2198	2.30	12th (7PD) Gear			194	57	72	28.610

LUGGING ABILITY IN RATED GEAR 8th (5PD)

Crankshaft Speed rpm	2202	1982	1760	1540	1315	1097
Pounds Pull	8998	10027	10578	10750	10256	9013
Increase in Pull %	0	11	18	19	14	0
Horsepower	119.30	118.84	110.71	98.30	80.36	59.48
Miles Per Hour	4.97	4.44	3.92	3.43	2.94	2.47
Slip of Drivers %	5.09	5.91	6.35	6.50	6.21	5.32

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power 2 Hours	81.5
75% of Pull at Max. Power 10 Hours	82.0
50% of Pull at Max. Power 2 Hours	82.0
50% of Pull at Reduced Engine Speed 2 Hours	80.0
Bystander in 16th (8DD) gear	89.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi	Four 18.4-38; 8; 16	Four 18.4-38; 8; 16
Ballast	—Liquid (each inner)	992 lb	None
	Cast Iron (each)	455 lb	None
Front Tires	—No., size, ply & psi	Two 11.00-16; 6; 32	Two 11.00-16; 6; 32
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	70 lb	None
Height of drawbar		21 in	21 in
Static weight with operator—rear		13540 lb	9735 lb
front		3640 lb	3500 lb
total		17180 lb	13235 lb

Department of Agricultural Engineering
Dates of Test: March 22 to April 10, 1979
Manufacturer: Ford Motor Co.—Ford Tractor Oper., 2500 E. Maple Rd., Troy, Michigan 48084

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8368 **Fuel weight** 6.967 lbs/gal **Oil SAE** 30 **API service classification** SB/SE-CA/CD **To motor** 4.342 gal **Drained from motor** 3.904 gal **Transmission and final drive lubricant** Ford M2C-53-A **Total time engine was operated** 67.0 hours.

ENGINE Make Ford Diesel **Type** Six cylinder vertical with turbocharger **Serial No.** *H347448* **Crankshaft** lengthwise **Rated rpm** 2200 **Bore and stroke** 4.4" x 4.4" **Compression ratio** 15.6 to 1 **Displacement** 401 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with centrifugal precleaner **Oil filter** one full flow paper element **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** thermostat.

CHASSIS: Type standard with duals **Serial No.** C-597155 **Tread width** rear 60.0" to 112.0" front 60.0" to 84.0" **Wheel base** 109.7" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 33.3" Vertical distance above roadway 44.6" Horizontal distance from center of rear wheel tread 0.4" to the left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled power shift **Advertised speeds mph** first 1.7 second 2.2 third 2.7 fourth 3.4 fifth 3.4 sixth 4.3 seventh 4.5 eighth 5.2 ninth 5.8 tenth 6.7 eleventh 8.0 twelfth 10.1 thirteenth 10.3 fourteenth 13.0 fifteenth 13.5 sixteenth 17.4 reverse 1.9, 2.4, 5.6, 7.2 **Clutch** single dry disc operated by foot pedal **Brakes** single wet disc operated hydraulically by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 158" left 160" (on concrete surface without brake) right 178" left 180" **Turning space diameter** (on concrete surface with brake applied) right 330" left 334" (on concrete surface without brake) right 370" left 374" **Power take-off** 1000 rpm at 1918 engine rpm and 540 rpm at 1873 rpm.

REPAIRS AND ADJUSTMENTS: During the drawbar tests, erratic engine operation was observed resulting in faulty power and fuel consumption data. After readjusting the throttle linkage, the PTO tests and drawbar tests were run over again.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump was 169°F. Ten gears were chosen between 15% and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1300.

LOUIS I. LEVITICUS
Engineer-in Charge
G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers
The Agricultural Experiment Station
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University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1301—FORD TW-10 DIESEL
16-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crankshaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1199 rpm)								
110.24	2300	7.722	0.488	14.28	195	57	75	29.030
Standard Power Take-off Speed 1000 rpm)—One Hour								
101.09	1918	6.804	0.469	14.86	196	57	75	29.020
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
100.27	2464	7.256	0.504	13.82	188	56	76	......
0.00	2564	2.541	......	......	180	54	75	......
51.05	2508	4.586	0.626	11.13	185	56	75	......
110.76	2300	7.764	0.488	14.27	194	57	75	......
25.83	2537	3.617	0.976	7.14	182	56	75	......
75.91	2486	5.873	0.539	12.92	186	56	75	......
Av 60.64	**2476**	**5.273**	**0.606**	**11.50**	**186**	**56**	**75**	**29.020**

DRAWBAR PERFORMANCE

Hp	Drawbar pull lbs	Speed miles per hr	Crankshaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cooling med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 8th (5PD) Gear											
94.34	6761	5.23	2300	4.85	7.751	0.572	12.17	191	46	54	28.750
75% of Pull at Maximum Power—Ten Hours 8th (5PD) Gear											
80.12	5242	5.73	2480	3.37	6.728	0.585	11.91	186	31	37	29.222
50% of Pull at Maximum Power—Two Hours 8th (5PD) Gear											
54.74	3499	5.87	2515	2.44	5.365	0.683	10.20	185	39	44	28.850
50% of Pull at Reduced Engine Speed—Two Hours 11th (6PD) Gear											
54.84	3500	5.88	1625	2.20	4.127	0.524	13.29	185	39	46	28.770
MAXIMUM POWER IN SELECTED GEARS											
82.39	12006	2.57	2462	14.91	3rd (2PD) Gear			186	33	36	28.900
91.55	10661	3.22	2300	9.34	4th (3PD) Gear			190	45	54	28.760
90.58	10221	3.32	2300	8.51	5th (2DD) Gear			191	44	53	28.770
92.96	8110	4.30	2300	5.98	6th (3DD) Gear			191	43	51	28.800
95.42	8006	4.47	2300	5.83	7th (4PD) Gear			191	43	51	28.810
97.35	6984	5.23	2300	5.08	8th (5PD) Gear			191	43	51	28.820
93.05	5966	5.85	2298	4.09	9th (4DD) Gear			191	43	51	28.800
96.58	5312	6.82	2300	3.47	10th (5DD) Gear			191	43	51	28.790
97.24	4420	8.25	2300	2.92	11th (6PD) Gear			191	45	52	28.770

LUGGING ABILITY IN RATED GEAR (8th 5PD)						
Crankshaft Speed rpm	2300	2069	1831	1607	1375	1144
Pounds Pull	6984	7556	7994	8183	8260	8048
Increase in Pull %	0	8	14	17	18	15
Horsepower	97.35	94.31	87.82	78.75	67.96	55.20
Miles Per Hour	5.23	4.68	4.12	3.61	3.09	2.57
Slip of Drivers %	5.08	5.53	5.83	5.98	6.28	5.98

TRACTOR SOUND LEVEL WITH CAB	**dB(A)**
Maximum Available Power 2 Hours	81.5
75% of Pull at Max. Power 10 Hours	82.5
50% of Pull at Max. Power 2 Hours	83.0
50% of Pull at Reduced Engine Speed 2 Hours	82.0
Bystander in 16th (8DD) gear	89.5

TIRES, BALLAST AND WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi	Four 18.4-38; 8; 16	Four 18.4-38; 8; 16
Ballast	—Liquid (each inner)	748 lb	None
	Cast Iron (each)	170 lb	None
Front Tires	—No., size, ply & psi	Two 11.00-16; 6; 32	Two 11.00-16; 6; 32
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	75 lb	None
Height of drawbar		21.5 in	21.5 in
Static weight with operator	—rear	11760 lb	9585 lb
	front	3430 lb	3280 lb
	total	15190 lb	12865 lb

Department of Agricultural Engineering
Dates of Test: March 22 to April 9, 1979
Manufacturer: Ford Motor Co.-Ford Tractor Oper., 2500 E. Maple Rd., Troy, Michigan 48084

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8368 **Fuel weight** 6.967 lbs/gal **Oil SAE** 30 **API service classification** SB/SE-CA/CD **To motor** 4.383 gal **Drained from motor** 3.916 gal **Transmission and final drive lubricant** Ford M2C-53-A **Total time engine was operated** 57.0 hours.

ENGINE Make Ford Diesel **Type** Six cylinder **Serial No.** *G34781* **Crankshaft** lengthwise **Rated rpm** 2300 **Bore and stroke** 4.4" x 4.4" **Compression ratio** 16.3 to 1 **Displacement** 401 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with centrifugal precleaner **Oil filter** one full flow paper element **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** thermostat.

CHASSIS: Type standard with duals **Serial No.** G-580930 **Tread width** rear 60.0" to 112.0" front 60.0" to 84.0" **Wheel base** 109.7" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 31.8" Vertical distance above roadway 42.8" Horizontal distance from center of rear wheel tread 0.2" to the left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled power shift **Advertised speeds mph** first 1.8 second 2.4 third 2.8 fourth 3.5 fifth 3.6 sixth 4.6 seventh 4.7 eighth 5.5 ninth 6.1 tenth 7.0 eleventh 8.5 twelfth 10.7 thirteenth 10.9 fourteenth 13.7 fifteenth 14.2 sixteenth 18.3 reverse 2.0, 2.5, 5.9, 7.6 **Clutch** single dry disc operated by foot pedal **Brakes** single wet disc operated hydraulically by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake) right 158" left 160" (on concrete surface without brake applied) right 178" left 180"

REPAIRS AND ADJUSTMENTS: During the limber up period the transmission low pressure warning switch failed. A new switch was installed and test continued. The new switch failed during the Maximum Drawbar Power Test in 5th (2DD) Gear and was replaced with a pipe plug. During preliminary PTO test a loss of power was observed. All injectors were removed and cleaned. One new injector was installed and fuel pump timing advanced one degree. During the Ten Hour Test the differential lock spool retaining clip broke, causing engagement of differential lock. This clip was replaced and was test run again.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump was 176°F. Nine gears were chosen between 15% and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1301.

LOUIS I. LEVITICUS
Engineer-in Charge
G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers
The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1302—CASE 2390 POWERSHIFT DIESEL 12-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1002 rpm)								
160.72	2100	10.555	0.457	15.23	191	57	75	28.753
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
140.48	2161	9.565	0.474	14.69	188	56	74	......
0.00	2306	2.978	......	......	176	56	74	......
72.49	2230	6.159	0.591	11.77	182	57	75	......
160.04	2100	10.543	0.459	15.18	192	57	75	......
36.84	2266	4.569	0.863	8.06	178	56	74	......
107.40	2204	7.858	0.509	13.67	186	57	75	......
Av 86.21	2211	6.945	0.561	12.41	184	57	75	28.757

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 6th (2I) Gear											
137.72	9946	5.19	2100	6.04	10.435	0.527	13.20	190	46	58	28.910
75% of Pull at Maximum Power—Ten Hours 6th (2I) Gear											
113.06	7660	5.53	2193	4.25	8.933	0.550	12.66	187	45	57	28.685
50% of Pull at Maximum Power—Two Hours 6th (2I) Gear											
78.19	5137	5.71	2231	2.78	7.112	0.633	10.99	182	40	46	28.535
50% of Pull at Reduced Engine Speed—Two Hours 9th (3H) Gear											
78.41	5139	5.72	1550	2.83	5.639	0.501	13.90	183	40	47	28.595
MAXIMUM POWER IN SELECTED GEARS											
126.89	16020	2.97	2154	14.89	3rd (1H) Gear			184	40	46	28.910
139.87	14024	3.74	2099	9.83	4th (2L) Gear			192	50	65	28.880
143.02	12138	4.42	2099	7.49	5th (3L) Gear			192	50	65	28.890
143.37	10360	5.19	2100	6.19	6th (2I) Gear			194	49	63	28.890
144.90	8985	6.05	2101	5.18	7th (3I) Gear			193	49	64	28.870
146.01	8314	6.59	2100	4.78	8th (2H) Gear			193	50	65	28.870
144.87	7094	7.66	2100	3.98	9th (3H) Gear			192	51	66	28.860

LUGGING ABILITY IN RATED GEAR (6th 2I)

Crankshaft Speed rpm	2100	1885	1678	1469	1254	1046
Pounds Pull	10360	11287	11778	11828	10918	9613
Increase in Pull %	0	9	14	14	5	-7
Horsepower	143.37	139.20	128.79	113.01	89.79	66.50
Miles Per Hour	5.19	4.62	4.10	3.58	3.08	2.59
Slip of Drivers %	6.19	6.81	7.26	7.56	6.50	5.73

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power 2 Hours	76.5
75% of Pull at Max. Power 10 Hours	77.0
50% of Pull at Max. Power 2 Hours	77.0
50% of Pull at Reduced Engine Speed 2 Hours	74.5
Bystander in 12th (4H) gear	87.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi	Four 20.8-38; 8; 12	Four 20.8-38; 8; 12
Ballast	—Liquid (each inner)	1470 lb	None
	Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi	Two 16.5L-16.1; 10; 36	Two 16.5L-16.1: 10; 36
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	90 lb	None
Height of drawbar		22 in	22 in
Static weight with operator—rear		14450 lb	11510 lb
	front	4260 lb	4080 lb
	Total	18710 lb	15590 lb

Department of Agricultural Engineering
Dates of Test: April 6-16, 1979

Manufacturer: J I Case Co., 700 State Street, Racine, Wisconsin 53404

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8359 **Fuel weight** 6.960 lbs/gal **Oil SAE** 30 **API service classification** SE-CD **To motor** 5.436 gal **Drained from motor** 5.392 gal **Transmission and final drive lubricant** Case TFD Fluid **Total time engine was operated** 38.5 hours.

ENGINE Make Case Diesel **Type** Six cylinder vertical with turbochargef **Serial No.** 10170112 **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.625" x 5.0" **Compression ratio** 15.8 to 1 **Displacement** 504 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** two full flow cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: Type standard with duals **Serial No.** 8841162 **Tread width** rear 64" to 134" front 64" to 92" **Wheel base** 104" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 31.7" Vertical distance above roadway 40.7" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (3) range operator controlled powershift **Advertised speeds mph** first 2.0 second 2.7 third 3.3 fourth 4.1 fifth 4.7 sixth 5.5 seventh 6.2 eighth 6.9 ninth 7.8 tenth 10.9 eleventh 14.7 twelfth 20.1 reverse 3.3, 6.9, 7.8 **Clutch** multiple wet disc hydraulically operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 152" left 152" (on concrete surface without brake) right 169" left **Turning space diameter** (on concrete surface with brake applied) right 317" left 317" (on concrete surface without brake) right 356" left 356" **Power take-off** 1002 rpm at 2100 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 187°F. Seven gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1302.**

LOUIS I. LEVITICUS
Engineer-in Charge
G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1303—CASE 2590 POWERSHIFT DIESEL 12-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1003 rpm)								
180.38	2100	11.611	0.448	15.53	203	57	75	28.697
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
158.51	2174	10.478	0.460	15.13	196	56	75	......
0.00	2314	2.957	.....	.....	176	56	74	......
82.28	2256	6.659	0.563	12.35	187	56	74	......
181.44	2101	11.707	0.450	15.47	203	57	76	......
41.94	2291	4.793	0.795	8.75	182	56	74	......
121.42	2214	8.517	0.488	14.26	191	56	76	......
Av 97.55	**2225**	**7.519**	**0.536**	**12.97**	**189**	**56**	**75**	**28.675**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull-lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 6th (2I) Gear											
153.24	11111	5.17	2100	6.62	11.422	0.519	13.42	201	58	70	28.945
75% of Pull at Maximum Power—Ten Hours 6th (2I) Gear											
125.09	8495	5.52	2194	4.57	9.601	0.534	13.03	194	60	71	28.954
50% of Pull at Maximum Power—Two Hours 6th (2I) Gear											
87.18	5687	5.75	2250	3.12	7.471	0.596	11.67	189	60	72	28.920
50% of Pull at Reduced Engine Speed—Two Hours 9th (3H) Gear											
86.70	5657	5.75	1559	3.12	6.178	0.496	14.03	188	58	69	28.960
MAXIMUM POWER IN SELECTED GEARS											
142.11	17865	2.98	2155	14.83	3rd (1H) Gear			192	54	60	28.950
152.59	15381	3.72	2100	10.48	4th (2L) Gear			197	55	66	28.960
156.38	13328	4.40	2099	8.08	5th (3L) Gear			199	55	66	28.960
156.10	11318	5.17	2098	6.58	6th (2I) Gear			199	53	63	28.950
158.73	9874	6.03	2100	5.65	7th (3I) Gear			199	55	67	28.960
159.01	9073	6.57	2101	5.10	8th (2H) Gear			199	56	68	28.960
157.83	7752	7.64	2099	4.22	9th (3H) Gear			199	57	69	28.950

LUGGING ABILITY IN RATED GEAR (6th 2I)

Crankshaft Speed rpm	2098	1887	1681	1465	1251	1046
Pounds Pull	11318	11988	12194	11873	11269	10037
Increase in Pull %	0	6	8	5	0	-11
Horsepower	156.10	147.93	133.81	113.82	92.58	69.50
Miles Per Hour	5.17	4.63	4.12	3.59	3.08	2.60
Slip of Drivers %	6.58	7.04	7.34	7.04	6.73	5.96

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power 2 Hours	77.0
75% of Pull at Max. Power 10 Hours	77.0
50% of Pull at Max. Power 2 Hours	76.5
50% of Pull at Reduced Engine Speed 2 Hours	75.0
Bystander in 12th (4H) gear	87.5

TIRES, BALLAST AND WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi	Four 20.8-38; 8; 14	Four 20.8-38; 8; 14
Ballast	—Liquid (each)	1008 lb	None
	Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi	Two 16.5L-16.1 10; 36	Two 16.5L-16.1; 10; 36
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	365 lb	None
Height of drawbar		22 in	22 in
Static weight with operator—rear		15670 lb	11640 lb
front		4830 lb	4100 lb
Total		20500 lb	15740 lb

Department of Agricultural Engineering
Dates of Test: April 9-19, 1979

Manufacturer: J I Case Co., 700 State Street, Racine, Wisconsin 53404

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8359 **Fuel weight** 6.960 lbs/gal **Oil SAE** 30 **API service classification** SE-CD **To motor** 6.167 gal **Drained from motor** 6.027 gal **Transmission and final drive lubricant** Case TFD Fluid **Total time engine was operated** 40.5 hours.

ENGINE Make Case Diesel **Type** Six cylinder vertical with turbocharger **Serial No.** 1017382 **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.625" x 5.0" **Compression ratio** 15.8 to 1 **Displacement** 504 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** two full flow cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: Type standard with duals **Serial No.** 8840761 **Tread width** rear 64" to 134" front 64" to 92" **Wheel base** 104" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 30.9" Vertical distance above roadway 39.8" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (3) range operator controlled powershift **Advertised speeds mph** first 2.0 second 2.7 third 3.3 fourth 4.1 fifth 4.7 sixth 5.5 seventh 6.2 eighth 6.9 ninth 7.8 tenth 10.9 eleventh 14.7 twelfth 20.1 reverse 3.3, 6.9, 7.8 **Clutch** multiple wet disc hydraulically operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 152" left 152" (on concrete surface without brake) right 169" left 169" **Turning space diameter** (on concrete surface with brake applied) right 317" left 317" (on concrete surface without brake) right 356" left 356" **Power take-off** 1003 rpm at 2100 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was We, the Seven gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1303.**

LOUIS I. LEVITICUS
Engineer-in Charge
G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1304—CASE 2090 MANUAL DIESEL 8-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—998 rpm)								
108.74	2100	7.061	0.452	15.40	189	61	75	28.997
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
95.40	2168	6.409	0.468	14.88	186	62	76	......
0.00	2316	2.379	......	......	176	62	74	......
49.49	2256	4.263	0.599	11.61	182	62	75	......
109.54	2100	7.125	0.453	15.37	192	62	75	......
25.09	2288	3.259	0.904	7.70	177	62	74	......
73.07	2214	5.405	0.515	13.52	184	63	76	......
Av 58.77	**2224**	**4.807**	**0.569**	**12.23**	**183**	**62**	**75**	**29.010**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 5th (3L) Gear											
93.17	6288	5.56	2100	5.64	6.950	0.519	13.41	189	59	71	28.915
75% of Pull at Maximum Power—Ten Hours 5th (3L) Gear											
75.53	4801	5.90	2191	3.94	5.952	0.548	12.69	185	63	69	28.778
50% of Pull at Maximum Power—Two Hours 5th (3L) Gear											
52.59	3217	6.13	2249	2.74	4.903	0.649	10.73	179	46	48	28.925
50% of Pull at Reduced Engine Speed—Two Hours 6th (3H) Gear											
52.26	3191	6.14	1786	2.58	4.059	0.541	12.88	180	47	49	28.980
MAXIMUM POWER IN SELECTED GEARS											
80.04	11655	2.58	2182	14.61	2nd (1H) Gear			183	51	55	28.990
92.11	9782	3.53	2099	9.96	3rd (2L) Gear			191	60	74	28.930
94.99	7747	4.60	2099	6.95	4th (2H) Gear			191	60	74	28.930
94.93	6397	5.57	2100	5.48	5th (3L) Gear			191	60	74	28.940
95.31	5036	7.10	2099	4.13	6th (3H) Gear			191	60	74	28.930

LUGGING ABILITY IN RATED GEAR (5th 3L)

Crankshaft Speed rpm	2100	1886	1679	1467	1256	1049
Pounds Pull	6397	6935	7269	7252	6856	6271
Increase in Pull %	0	8	14	13	7	-2
Horsepower	94.93	91.90	85.41	74.48	60.49	46.48
Miles Per Hour	5.57	4.97	4.41	3.85	3.31	2.78
Slip of Drivers %	5.48	6.03	6.34	6.49	6.03	5.56

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power 2 Hours	77.0
75% of Pull at Max. Power 10 Hours	76.0
50% of Pull at Max. Power 2 Hours	77.5
50% of Pull at Reduced Engine Speed 2 Hours	76.0
Bystander in 8th (4H) gear	89.5

TIRES, BALLAST AND WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi	Two 20.8-38; 8; 18	Two 20.8-38; 8; 18
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	1440 lb	None
Front Tires	—No., size, ply & psi	Two 11.00-16; 8; 40	Two 11.00-16; 8; 40
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	120 lb	None
Height of drawbar		21 in	21 in
Static weight with operator—rear		11490 lb	8610 lb
	front	3540 lb	3300 lb
	Total	15030 lb	11910 lb

Department of Agricultural Engineering
Dates of Test: April 11-21, 1979

Manufacturer: J I Case Co., 700 State Street, Racine, Wisconsin 53404

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8359 **Fuel weight** 6.960 lbs/gal **Oil SAE** 30 **API service classification** SE-CD **To motor** 4.233 gal **Drained from motor** 3.989 gal **Transmission and final drive lubricant** Case TFD Fluid **Total time engine was operated** 34.5 hours.

ENGINE Make Case Diesel **Type** Six cylinder vertical **Serial No.** 10172513 **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.625" x 5.0" **Compression ratio** 16 to 1 **Displacement** 504 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: Type standard **Serial No.** 8841892 **Tread width** rear 64" to 88" front 60" to 88" **Wheel base** 104" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 29.0" Vertical distance above roadway 41.3" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** first 2.2 second 2.8 third 3.8 fourth 4.8 fifth 5.4 sixth 6.7 seventh 11.7 eighth 16.1 reverse 2.7, 4.6, 6.5, 14.1 **Clutch** multiple wet disc hydraulically operated by two foot pedals which can be locked together **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 142" left 142" (on concrete surface without brake) right 167" left 167" **Turning space diameter** (on concrete surface with brake applied) right 296" left 296" (on concrete surface without brake) right 347" left 347" **Power take-off** 998 rpm at 2100 engine rpm and 534 rpm at 2100 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 183°F. Five gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1304.

LOUIS I. LEVITICUS
Engineer-in Charge
G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1305—DEUTZ DX-90 DIESEL
15-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer Inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1111 rpm)								
84.47	2300	5.196	0.428	16.26	air	62	75	29.013
Standard Power Take-off Speed (1000 rpm)—One Hour								
80.82	2071	4.912	0.423	16.45	air	62	75	29.040
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
73.11	2348	4.372	0.416	16.72	air	62	75	......
0.00	2454	1.281	......	......	air	62	75	......
37.58	2404	2.738	0.507	13.73	air	62	75	......
86.10	2301	5.316	0.430	16.20	air	61	75	......
18.98	2418	1.953	0.716	9.72	air	62	75	......
55.69	2375	3.527	0.441	15.79	air	61	75	......
Av 45.24	**2385**	**3.198**	**0.492**	**14.15**	**air**	**61**	**75**	**29.063**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer Inches of Mercury
Maximum Available Power—Two Hours 9th (1S) Gear											
69.95	5294	4.95	2299	7.81	5.066	0.504	13.81	air	60	67	28.660
75% of Pull at Maximum Power—Ten Hours 9th (1S) Gear											
57.50	4157	5.19	2361	6.02	4.085	0.494	14.07	air	60	70	28.918
50% of Pull at Maximum Power—Two Hours 9th (1S) Gear											
40.05	2783	5.40	2407	4.05	3.234	0.562	12.39	air	58	61	28.750
50% of Pull at Reduced Engine Speed—Two Hours 12th (5Z) GEAR											
39.82	2761	5.41	1517	3.98	2.623	0.458	15.18	air	58	64	28.725
MAXIMUM POWER IN SELECTED GEARS											
52.37	8786	2.24	2353	14.78	4th (1Z) Gear			air	60	70	28.650
68.41	8723	2.94	2299	14.38	5th (4L) Gear			air	60	69	28.640
69.52	7618	3.42	2298	12.52	6th (2Z) Gear			air	52	68	29.070
69.66	6949	3.76	2300	10.88	7th (5L) Gear			air	52	67	29.080
71.41	6153	4.35	2300	9.24	8th (3Z) Gear			air	52	66	29.090
72.74	5533	4.93	2298	8.20	9th (1S) Gear			air	51	65	29.100

LUGGING ABILITY IN RATED GEAR (9th 1S)

Crankshaft Speed rpm	2298	2069	1840	1606	1379	1142
Pounds Pull	5533	5866	6164	6128	5999	5770
Increase in Pull %	0	6	11	11	8	4
Horsepower	72.74	69.00	64.13	55.72	46.90	37.49
Miles Per Hour	4.93	4.41	3.90	3.41	2.93	2.44
Slip of Drivers %	8.20	8.92	9.30	9.30	9.05	8.92

TRACTOR SOUND LEVEL WITH CAB dB(A)

	With European Cab	With American Cab
Maximum Available Power—Two Hours	81.5	83.5
75% of Pull at Maximum Power—Ten Hours	81.0	80.0
50% of Pull at Maximum Power—Two Hours	80.0	80.5
50% of Pull at Reduced Engine Speed—Two Hours	78.0	79.5
Bystander in 15th (5S) Gear		89.0

TIRES, BALLAST AND WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi	Two 18.4-34; 6; 16	Two 8.4-34; 6; 16
Ballast	—Liquid (each)	815 lb	None
	Cast Iron (each)	720 lb	None
Front Tires	—No., size, ply & psi	Two 10.00-16; 6; 32	Two 10.00-16; 6; 32
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	70 lb	None
Height of drawbar		24.5 in	24.5 in
Static weight with operator—rear		9700 lb	6630 lb
	front	3450 lb	3310 lb
	Total	13150 lb	9940 lb

Department of Agricultural Engineering

Dates of Test: April 18-25, 1979

Manufacturer: Klockner-Humboldt-Deutz, AG 5, Cologne 80, West Germany.

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8357 **Fuel weight** 6.958 lbs/gal **Oil** SAE 30 **API service classification** SB/SE-CA/CD **To motor** 3.555 gal **Drained from motor** 2.883 gal **Transmission and final drive lubricant** SAE 20W20 **Total time engine was operated** 46.0 hours.

ENGINE Make Deutz Diesel **Type** Five cylinder vertical **Serial No.** 6027267 **Crankshaft** lengthwise **Rated rpm** 2300 **Bore and stroke** 3.94" x 4.72" **Compression ratio** 17 to 1 **Displacement** 287 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with centrifugal precleaner **Oil filter** one paper cartridge **Oil cooler** radiator for crankcase oil, radiator for hydraulic oil **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium temperature control** air cooled.

CHASSIS: Type standard **Serial No.** 7618 0434 **Tread width** rear 63.0" to 78.7" front 58.1" to 77.8" **Wheel base** 100.7" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 35.6" Vertical distance above roadway 37.8" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** first 1.3 second 2.0 third 2.5 fourth 2.7 fifth 3.6 sixth 4.1 seventh 4.4 eighth 5.0 ninth 5.6 tenth 7.3 eleventh 8.6 twelfth 9.0 thirteenth 10.6 fourteenth 15.5 fifteenth 18.6 reverse 3.3, 5.0, 6.2, 9.0, 11.0 **Clutch** single dry disc operated by foot pedal **Brakes** double dry disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 153.5" left 148.7" (on concrete surface without brake) right 170.4" left 165.7" **Turning space diameter** (on concrete surface with brake applied) right 316.4" left 306.9" (on concrete surface without brake) right 350.2" left 340.8" **Power take-off** 1000 rpm at 2071 engine rpm and 540 rpm at 2057 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 170°F. Nine gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1305.

LOUIS I. LEVITICUS
Engineer-in Charge
G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1306—DEUTZ DX-110 DIESEL 15-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crankshaft speed rpm	Fuel Consumption		Hp-hr per gal	Temperature Degrees F			Barometer Inches of Mercury
		Gal per hr	Lb per hp-hr		Cooling medium	Air wet bulb	Air dry bulb	
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1110 rpm)								
100.29	2300	6.677	0.463	15.02	air	64	75	28.727
Standard Power Take-off Speed (1000 rpm)—One Hour								
93.61	2071	6.200	0.461	15.10	air	65	75	28.710
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
87.13	2354	5.359	0.428	16.26	air	65	75	......
0.00	2428	1.479	......	......	air	64	74	......
44.22	2398	3.208	0.505	13.78	air	64	75	......
100.61	2300	6.761	0.468	14.88	air	65	76	......
22.33	2398	2.311	0.720	9.66	air	64	76	......
65.66	2360	4.217	0.447	15.57	air	64	75	......
Av 53.32	**2372**	**3.889**	**0.507**	**13.71**	**air**	**64**	**75**	**28.677**

DRAWBAR PERFORMANCE

Hp	Drawbar pull lbs	Speed miles per hr	Crankshaft speed rpm	Slip of drivers %	Fuel Consumption		Hp-hr per gal	Temp Degrees F			Barometer Inches of Mercury
					Gal per hr	Lb per hp-hr		Cooling med	Air wet bulb	Air dry bulb	
Maximum Available Power—Two Hours 9th (1S) Gear											
87.19	6142	5.32	2300	5.76	6.449	0.515	13.52	air	49	58	28.830
75% of Pull at Maximum Power—Ten Hours 9th (1S) Gear											
68.97	4660	5.55	2356	4.07	4.915	0.496	14.03	air	41	49	28.959
50% of Pull at Maximum Power—Two Hours 9th (1S) Gear											
47.29	3128	5.67	2371	2.77	3.755	0.552	12.60	air	52	65	28.700
50% of Pull at Reduced Engine Speed—Two Hours 12th (5Z) Gear											
47.07	3119	5.66	1492	2.65	3.126	0.462	15.06	air	44	54	28.945
MAXIMUM POWER IN SELECTED GEARS											
75.44	11773	2.40	2350	12.70	4th (1Z) Gear			air	41	47	28.960
85.80	10009	3.21	2299	10.95	5th (4L) Gear			air	52	65	28.770
86.57	8642	3.76	2298	8.64	6th (2Z) Gear			air	51	64	28.770
86.28	7906	4.09	2299	7.51	7th (5L) Gear			air	51	64	28.780
87.91	6993	4.71	2300	6.49	8th (3Z) Gear			air	51	64	28.790
88.24	6217	5.32	2298	5.68	9th (1S) Gear			air	53	66	28.740
90.82	4868	7.00	2300	4.48	10th (4Z) Gear			air	52	65	28.770
89.34	40.22	8.33	2301	3.47	11th (2S) Gear			air	53	66	28.760

LUGGING ABILITY IN RATED GEAR (9th 1S)

Crankshaft Speed rpm	2298	2072	1843	1608	1376	1146
Pounds Pull	6217	6500	6746	6756	6750	6640
Increase in Pull %	0	5	9	9	9	7
Horsepower	88.24	82.95	76.38	66.69	57.03	46.71
Miles Per Hour	5.32	4.79	4.25	3.70	3.17	2.64
Slip of Drivers %	5.68	5.98	6.27	6.27	6.27	6.13

TRACTOR SOUND LEVEL WITH CAB dB(A)

	With European Cab	With American Cab
Maximum Available Power—Two Hours	82.5	84.5
75% of Pull at Maximum Power—Ten Hours	82.5	83.0
50% of Pull at Maximum Power—Two Hours	82.0	83.0
50% of Pull at Reduced Engine Speed—Two Hours	77.5	78.0
Bystander in 15th (5S) Gear	.....	89.0

TIRES, BALLAST AND WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi	Four 18.5-38; 8; inner 14 outer 12	Four 18.4-38; 8; inner 14 outer 12
Ballast	—Liquid (each inner)	1000 lb	None
	Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi	Two 11.00-16; 8; 40	Two 11.00-16; 8; 40
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	180 lb	None
Height of drawbar		27 in	27 in
Static weight with operator—rear		11180 lb	9180 lb
front		3760 lb	3400 lb
Total		14940 lb	12580 lb

Department of Agricultural Engineering

Dates of Test: April 21-30, 1979

Manufacturer: Klockner-Humboldt-Deutz, AG5, Cologne 80, West Germany.

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8357 **Fuel weight** 6.958 lbs/gal **Oil SAE 30 API service classification** SB/SE-CA/CD **To motor** 6.007 gal **Drained from motor** 3.235 gal **Transmission and final drive lubricant** SAE 20W20 **Total time engine was operated** 46.0 hours.

ENGINE Make Deutz Diesel **Type** 6 cylinder vertical **Serial No.** 5909217 **Crankshaft** lengthwise **Rated rpm** 2300 **Bore and stroke** 3.94" x 4.72" **Compression ratio** 17 to 1 **Displacement** 345 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with centrifugal precleaner **Oil filter** one paper cartridge **Oil cooler** radiator for crankcase oil, radiator for hydraulic oil **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium temperature control** air cooled.

CHASSIS: Type standard with duals **Serial No.** 7620 0190 **Tread width** rear 70.9" to 126" front 59.1" to 82.7" **Wheel base** 105.8" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 36.5" Vertical distance above roadway 39.2" Horizontal distance from center of rear wheel tread 0.3" to the left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** first 1.3 second 2.0 third 2.5 fourth 2.7 fifth 3.6 sixth 4.1 seventh 4.5 eighth 5.1 ninth 5.7 tenth 7.4 eleventh 8.7 twelfth 9.1 thirteenth 10.7 fourteenth 15.5 fifteenth 18.6 reverse 3.3, 5.1, 6.2, 9.1, 11.1 **Clutch** single dry disc operated by foot pedal **Brakes** double dry disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 163" left 159" (on concrete surface without brake) right 183.5" left 180.7" **Turning space diameter** (on concrete surface with brake applied) right 344" left 337" (on concrete surface without brake) right 385" left 380.4" **Power take-off** 1000 rpm at 2071 engine rpm and 540 rpm at 2060 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 167°F. Eight gears were chosen between stability limit and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1306.**

LOUIS I. LEVITICUS
Engineer-in Charge
G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1307—DEUTZ DX-160 DIESEL 24-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crankshaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1148 rpm)								
145.41	2200	8.425	0.403	17.26	air	60	75	28.830
Standard Power Take-off Speed (1000 rpm)—One Hour								
140.99	1917	7.913	0.391	17.82	air	60	75	28.810
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
125.59	2236	7.455	0.413	16.85	air	60	75	......
0.00	2337	2.031	......	......	air	60	76	......
64.11	2283	4.704	0.510	13.63	air	60	75	......
145.69	2200	8.481	0.405	17.18	air	60	76	......
32.49	2314	3.272	0.701	9.93	air	60	74	......
95.32	2264	6.071	0.443	15.70	air	60	74	......
Av 77.20	2272	5.336	0.481	14.47	air	60	75	28.770

DRAWBAR PERFORMANCE

Hp	Drawbar pull lbs	Speed miles per hr	Crankshaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cooling med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 15th (3ZH) Gear											
121.64	8074	5.65	2199	5.76	8.354	0.478	14.56	air	57	66	28.780
75% of Pull at Maximum Power—Ten Hours 15th (3ZH) Gear											
97.75	6205	5.91	2263	4.29	7.010	0.499	13.95	air	42	52	29.026
50% of Pull at Maximum Power—Two Hours 15th (3ZH) Gear											
67.33	4146	6.09	2292	2.62	5.641	0.583	11.93	air	47	50	28.850
50% of Pull at Reduced Engine Speed—Two Hours 20th (2SH) Gear											
67.06	4140	6.08	1444	2.66	4.455	0.462	15.05	air	59	72	28.725
MAXIMUM POWER IN SELECTED GEARS											
109.06	15172	2.70	2235	14.41	7th (1ZH) Gear			air	53	60	28.810
115.03	14333	3.01	2200	13.32	8th (2ZL) Gear			air	52	58	28.820
116.36	13979	3.12	2200	13.39	9th (3LH) Gear			air	47	58	28.830
118.18	12329	3.59	2200	10.16	10th (4LL) Gear			air	47	58	28.840
123.34	11695	3.96	2199	9.10	11th (2ZH) Gear			air	47	59	28.840
121.16	10293	4.41	2201	7.64	12th (3ZL) Gear			air	47	59	28.840
124.20	10030	4.64	2199	7.49	13th (4LH) Gear			air	47	60	28.850
121.17	9021	5.04	2199	6.52	14th (1SL) Gear			air	47	60	28.850
124.24	8274	5.63	2199	6.22	15th (3ZH) Gear			air	48	61	28.860
122.14	7254	6.31	2200	5.22	16th (4ZL) Gear			air	47	57	28.830
124.81	7296	6.41	2198	5.14	17th (1SH) Gear			air	47	55	28.830
121.29	6295	7.23	2200	4.67	18th (2SL) Gear			air	47	53	28.830
123.44	5783	8.00	2202	4.27	19th (4ZH) Gear			air	48	52	28.820

LUGGING ABILITY IN RATED GEAR (15th 3ZH)

Crankshaft Speed rpm	2199	1980	1758	1545	1317	1095
Pounds Pull	8274	9098	9881	9627	8327	6807
Increase in Pull %	0	10	19	16	1	-18
Horsepower	124.24	122.11	116.96	100.27	74.80	51.49
Miles Per Hour	5.63	5.03	4.44	3.91	3.37	2.84
Slip of Drivers %	6.22	6.97	7.57	7.27	6.22	4.98

TRACTOR SOUND LEVEL WITH CAB dB(A)

	With European Cab	With American Cab
Maximum Available Power—Two Hours	80.5	80.5
75% of Pull at Maximum Power—Ten Hours	80.5	81.5
50% of Pull at Maximum Power—Two Hours	79.5	81.5
50% of Pull at Reduced Engine Speed—Two Hours	76.5	80.0
Bystander in 24th (4SH) gear	.....	86.0

TIRES, BALLAST AND WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi	Four 20.8-38; 8; 12	Four 20.8-38; 8; 12
Ballast	—Liquid (each)	875 lb	None
	Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi	Two 11.00-16; 8; 40	Two 1.00-16; 8; 40
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	185 lb	None
Height of drawbar		24.5 in	24.5 in.
Static weight with operator—rear		14040 lb	10540 lb
front		4670 lb	4300 lb
Total		18710 lb	14840 lb

Department of Agricultural Engineering

Dates of Test: April 24 to May 2, 1979

Manufacturer: Klockner-Humboldt-Deutz. AG5. Cologne 80. West Germany.

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8357 **Fuel weight** 6.958 lbs/gal **Oil SAE** 30 **API service classification** SB/SE-CA/CD **To motor** 4.648 gal **Drained from motor** 3.082 gal **Transmission and final drive lubricant** SAE 20W30 **Total time engine was operated** 42.5 hours.

ENGINE Make Deutz Diesel **Type** 6 cylinder vertical with turbocharger **Serial No.** 6011763 **Crankshaft** lengthwise **Rated rpm** 2200 **Bore and stroke** 4.02" x 4.92" **Compression ratio** 15.5 to 1 **Displacement** 374 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with centrifugal precleaner **Oil filter** one paper cartridge **Oil cooler** radiator for crankcase oil, radiator for hydraulic oil **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium temperature control** air cooled.

CHASSIS: Type standard with duals **Serial No.** 7624 0013 **Tread width** rear 70.9" to 126" front 62.8" to 86.6" **Wheel base** 111.5" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 39.8" Vertical distance above roadway 40.6" Horizontal distance from center of rear wheel tread 0.2" to the left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ration with partial (2) range operator controlled power shift **Advertised speeds mph** first 1.5 second 1.9 third 2.1 fourth 2.5 fifth 2.7 sixth 2.9 seventh 3.2 eighth 3.5 ninth 3.7 tenth 4.1 eleventh 4.4 twelfth 4.9 thirteenth 5.1 fourteenth 5.5 fifteenth 6.1 sixteenth 6.8 seventeenth 6.9 eighteenth 7.7 nineteenth 8.5 twentieth 9.7 twenty-first 10.6 twenty-second 13.3 twenty-third 14.8 twenty-fourth 18.6 reverse 2.6, 3.3, 3.7, 4.6, 5.1, 6.3, 7.0, 8.8 **Clutch** single dry disc operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 166.2" left 179.9" (on concrete surface without brake) right 185.8" left 196.5" **Turning space diameter** (on concrete surface with brake applied) right 352" left 362" (on concrete surface without brake) right 392" left 413" **Power take-off** 1000 rpm at 1917 engine rpm.

REPAIRS AND ADJUSTMENTS: The cooling fan belts were replaced at completion of limber up test.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 122°F. Thirteen gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1307**.

LOUIS I. LEVITICUS
Engineer-in Charge
G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1308—
ALLIS-CHALMERS 7045 POWERSHIFT DIESEL
12-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crankshaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1021 rpm)								
146.88	2300	9.950	0.471	14.76	192	60	75	28.987
Standard Power Take-off Speed (1000 rpm)—One Hour								
146.67	2253	9.828	0.466	14.92	191	58	75	28.980
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
130.58	2404	9.328	0.497	14.00	184	58	75	......
0.00	2547	3.552	......	......	176	58	75	......
67.80	2496	6.487	0.666	10.45	181	58	74	......
146.64	2300	9.953	0.472	14.73	188	58	75	......
34.15	2524	5.039	1.027	6.78	176	58	75	......
99.87	2454	7.944	0.544	12.57	183	58	75	......
Av 79.84	**2454**	**7.050**	**0.615**	**11.32**	**181**	**58**	**75**	**28.980**

DRAWBAR PERFORMANCE

Hp	Drawbar pull lbs	Speed miles per hr	Crankshaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cooling med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 5th (1F) Gear											
123.35	9380	4.93	2300	5.29	9.806	0.553	12.58	188	59	75	28.565
75% of Pull at Maximum Power—Ten Hours 5th (1F) Gear											
102.69	7277	5.29	2430	3.82	8.768	0.594	11.71	186	58	70	28.406
50% of Pull at Maximum Power—Two Hours 5th (1F) Gear											
70.67	4832	5.48	2486	2.56	7.346	0.723	9.62	180	62	66	28.340
50% of Pull at Reduced Engine Speed—Two Hours 7th (2F) Gear											
70.77	4840	5.48	1802	2.52	5.603	0.551	12.63	184	55	59	28.415
MAXIMUM POWER IN SELECTED GEARS											
98.94	15449	2.40	2436	14.76	2nd (2S) Gear			183	65	70	28.300
118.05	13534	3.27	2299	10.67	3rd (3S) Gear			188	57	74	28.630
122.50	10598	4.33	2300	6.23	4th (4S) Gear			191	57	73	28.640
127.17	9699	4.92	2297	5.37	5th (1F) Gear			189	55	70	28.680
119.92	8233	5.46	2299	4.49	6th (5S) Gear			186	57	74	28.620
127.61	6916	6.92	2300	3.52	7th (2F) Gear			185	57	74	28.610
119.52	6422	6.98	2300	3.44	8th (6S) Gear			192	57	74	28.600
122.54	4766	9.64	2298	2.36	9th (3F) Gear			189	58	74	28.580

LUGGING ABILITY IN RATED GEAR (5th 1F)						
Crankshaft Speed rpm	2297	2070	1843	1608	1409	1158
Pounds Pull	9699	10922	12085	12194	12030	11146
Increase in Pull %	0	13	25	26	24	15
Horsepower	127.17	127.75	123.94	109.03	94.40	72.62
Miles Per Hour	4.92	4.39	3.85	3.35	2.94	2.44
Slip of Drivers %	5.37	6.15	7.68	7.83	7.68	6.77

TRACTOR SOUND LEVEL WITH CAB	**dB(A)**
Maximum Available Power 2 Hours	76.0
75% of Pull at Max. Power 10 Hours	75.5
50% of Pull at Max. Power 2 Hours	76.5
50% of Pull at Reduced Engine Speed 2 Hours	73.5
Bystander in 12th (6F) gear	88.0

TIRES, BALLAST AND WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi	Four 20.8-38; 8; 14	Four 20.8-38; 8; 14
Ballast	—Liquid (each)	1088 lb	None
	Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi	Two 11.00-16; 8; 40	Two 11.00-16; 8; 40
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	20 lb	None
Height of drawbar		19 in	19 in
Static weight with operator—rear		15120 lb	10770 lb
	front	3870 lb	3830 lb
	Total	18990 lb	14600 lb

Department of Agricultural Engineering

Dates of Test: May 3-8, 1979

Manufacturer: Allis-Chalmers Corporation, P.O. Box 512, Milwaukee, Wisconsin 53201

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8359 **Fuel weight** 6.960 lbs/gal **Oil SAE** 30 **API service classification** SE/CD **To motor** 3.991 gal **Drained from motor** 2.908 gal **Transmission and final drive lubricant** AC Power Fluid 821 **Total time engine was operated** 36.5 hours.

ENGINE Make Allis-Chalmers Diesel **Type** Six cylinder vertical with turbocharger **Serial No.** 70-00969 **Crankshaft** lengthwise **Rated rpm** 2300 **Bore and stroke** 4.25" x 5.00" **Compression ratio** 16 to 1 **Displacement** 426 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with centrifugal precleaner **Oil filter** two paper cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil and radiator for hydraulic and transmission oil **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: Type standard with duals **Serial No.** 7045 S 2012 **Tread width** rear 66" to 144" front 62" to 90" **Wheel base** 106" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 27.8" Vertical distance above roadway 36.1" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (6) range operator controlled power shift **Advertised speeds mph** first 2.0 second 2.7 third 3.7 fourth 4.7 fifth 5.3 sixth 5.8 seventh 7.3 eighth 7.3 ninth 10.0 tenth 12.6 eleventh 15.6 twelfth 19.7 reverse 3.2, 8.5 **Clutch** multiple wet disc hydraulically operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 145.5" left 143" (on concrete surface without brake) right 199" left 196" **Turning space diameter** (on concrete surface with brake applied) right 295" left 291" (on concrete surface without brake) right 420" left 415" **Power take-off** 1000 rpm at 2253 engine rpm and 540 rpm at 2230 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 151°F. Eight gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1308.**

LOUIS I. LEVITICUS
Engineer-in Charge
G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers
The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1309—MASSEY-FERGUSON 2675 DIESEL 24-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1196 rpm)								
103.29	2500	7.240	0.488	14.27	194	59	75	29.013
Standard Power Take-off Speed (1000 rpm)—One Hour								
96.67	2091	6.266	0.451	15.43	196	58	75	29.005
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
92.62	2641	6.589	0.495	14.06	190	56	74	......
0.00	2758	2.436	......	......	180	58	75	......
47.46	2706	4.325	0.634	10.97	184	58	75	......
104.37	2500	7.288	0.486	14.32	194	58	76	......
23.91	2725	3.320	0.966	7.20	182	58	75	......
70.37	2676	5.339	0.528	13.18	186	58	76	......
Av 56.45	**2668**	**4.883**	**0.602**	**11.56**	**186**	**58**	**75**	**29.000**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 14th (5I) Gear											
84.29	6226	5.08	2499	7.28	7.169	0.592	11.76	197	58	76	29.085
75% of Pull at Maximum Power—Ten Hours 14th (5I) Gear											
71.13	4839	5.51	2651	5.01	6.188	0.605	11.49	194	64	81	28.814
50% of Pull at Maximum Power—Two Hours 14th (5I) Gear											
49.18	3234	5.70	2698	3.42	4.941	0.699	9.95	188	64	78	28.930
50% of Pull at Reduced Engine Speed—Two Hours 19th (6H) Gear											
48.90	3225	5.69	1514	3.46	3.540	0.504	13.82	193	66	83	28.875
MAXIMUM POWER IN SELECTED GEARS											
77.63	9674	3.01	2596	14.94	9th (4L) Gear			194	63	69	28.770
81.51	8875	3.44	2500	12.47	10th (5L) Gear			197	59	70	28.950
83.97	8191	3.84	2498	9.99	11th (3H) Gear			196	59	69	28.950
86.21	7454	4.34	2500	8.55	12th (4I) Gear			196	58	68	28.950
85.19	6299	5.07	2499	6.78	13th (6L) Gear			195	57	67	28.950
87.47	6446	5.09	2501	7.07	14th (5I) Gear			196	55	63	28.960
86.16	5690	5.68	2498	6.49	15th (4H) Gear			197	60	71	28.950
86.76	4901	6.64	2500	5.52	16th (5H) Gear			196	60	72	28.950
86.99	4522	7.21	2498	4.87	17th (6I) Gear			196	61	73	28.950
86.69	4270	7.61	2498	4.49	18th (7L) Gear			196	61	74	28.950
84.39	3380	9.36	2499	3.49	19th (6H) Gear			196	61	73	28.950

LUGGING ABILITY IN RATED GEAR (14th 5I)

Crankshaft Speed rpm	2501	2255	1998	1742	1497	1244
Pounds Pull	6446	6944	7361	7746	7761	7612
Increase in Pull %	0	8	14	20	20	18
Horsepower	87.47	84.42	78.78	71.80	61.74	50.40
Miles Per Hour	5.09	4.56	4.01	3.48	2.98	2.48
Slip of Drivers %	7.07	7.64	8.20	8.90	9.03	8.76

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power 2 Hours	81.5
75% of Pull at Max. Power 10 Hours	83.0
50% of Pull at Max. Power 2 Hours	82.0
50% of Pull at Reduced Engine Speed 2 Hours	79.0
Bystander in 23rd (8I) gear	91.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi	Two 18.4-38; 10; 22	Two 18.4-38; 10; 22
Ballast	—Liquid (each)	1032 lb	None
Front Tires	—No., size, ply & psi	Two 11.00x16; 6; 32	Two 1.00-16; 6; 32
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	None	None
Height of drawbar		21.5 in	21.5 in
Static weight with operator—rear		10635 lb	8579 lb
	front	3860 lb	3860 lb
	Total	14495 lb	12430 lb

Department of Agricultural Engineering

Dates of Test: May 8-18, 1979

Manufacturer: Massey-Ferguson Inc., 1901 Bell Avenue, Des Moines, Iowa 50315

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8356 **Fuel weight** 6.957 lbs/gal **Oil SAE** 20-20W **API service classification** SB/SE-CA/CC **To motor** 4.137 gal **Drained from motor** 3.519 gal **Transmission and final drive lubricant** MF Permatran **Total time engine was operated** 38.0 hours.

ENGINE Make Perkins Diesel **Type** Six cylinder vertical **Serial No.** TW31008N28496F **Crankshaft** lengthwise **Rated rpm** 2500 **Bore and stroke** 3.875" x 5.0" **Compression ratio** 16 to 1 **Displacement** 354 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** one paper cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: Type standard **Serial No.** 9R 002625 **Tread width** rear 65" to 95" front 60" to 80" **Wheel base** 105.4" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 34.4" Vertical distance above roadway 43.3" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (3) range operator controlled power shift **Advertised speeds mph** first 1.2 second 1.6 third 1.6 fourth 2.1 fifth 2.3 sixth 2.4 seventh 2.9 eighth 3.3 ninth 3.4 tenth 3.9 eleventh 4.2 twelfth 4.7 thirteenth 5.4 fourteenth 5.4 fifteenth 6.0 sixteenth 6.9 seventeenth 7.5 eighteenth 7.9 nineteenth 9.6 twentieth 11.0 twenty-first 11.2 twenty-second 14.1 twenty-third 15.6 twenty-fourth 20.0 reverse 2.1, 2.9, 4.2, 6.0 **Clutch** single dry disc operated by foot pedal **Brakes** single wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 135" left 135" (on concrete surface without brake) right 180" left 180" **Turning space diameter** (on concrete surface with brake applied) right 294" left 294" (on concrete surface without brake) right 381" left 381" **Power take-off** 1000 rpm at 2091 engine rpm and 540 rpm at 1992 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump was 147°F. Eleven gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1309.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1310—MASSEY-FERGUSON 2705 DIESEL 24-SPEED

POWER TAKE-OFF PERFORMANCE

	Crank-shaft speed rpm	Fuel Consumption			Temperature Degrees F			
Hp		**Gal per hr**	**Lb per hp-hr**	**Hp-hr per gal**	**Cooling medium**	**Air wet bulb**	**Air dry bulb**	**Barometer Inches of Mercury**
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1196 rpm)								
122.20	2500	8.038	0.458	15.20	188	63	75	28.547
Standard Power Take-off Speed (1000 rpm)—One Hour								
115.85	2091	6.960	0.418	16.65	189	62	75	28.570
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
111.41	2681	7.978	0.498	13.97	188	62	76	......
0.00	2811	3.247	......	......	181	62	75	......
57.05	2752	5.610	0.684	10.17	184	62	76	......
122.87	2500	8.042	0.455	15.28	189	62	75	.....
28.80	2778	4.446	1.074	6.48	182	62	75	......
85.01	2725	6.787	0.555	12.52	186	62	75	......
Av 67.52	**2708**	**6.018**	**0.620**	**11.22**	**185**	**62**	**75**	**28.587**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer Inches of Mercury
Maximum Available Power—Two Hours 14th (5I) Gear											
101.44	7205	5.28	2500	6.52	7.960	0.546	12.74	191	49	60	28.970
75% of Pull at Maximum Power—Ten Hours 14th (5I) Gear											
86.23	5537	5.84	2719	4.84	7.654	0.618	11.27	188	41	42	28.740
50% of Pull at Maximum Power—Two Hours 14th (5I) Gear											
59.07	3672	6.03	2760	3.23	6.396	0.753	9.23	187	37	41	28.980
50% of Pull at Reduced Engine Speed—Two Hours 18th (7L) Gear											
58.75	3658	6.02	1889	3.19	4.528	0.536	12.98	184	41	47	29.000
MAXIMUM POWER IN SELECTED GEARS											
93.65	13085	2.68	2613	14.56	**7th (2H) Gear**			191	56	59	28.550
95.24	12100	2.95	2498	13.99	**8th (3I) Gear**			192	50	62	28.960
97.41	11906	3.07	2499	12.64	**9th (4L) Gear**			191	46	54	28.990
99.29	10127	3.68	2500	9.39	**10th (5) Gear**			190	51	53	28.580
100.72	9386	4.02	2500	8.61	**11th (3H) Gear**			190	52	54	28.570
102.62	8563	4.49	2497	7.88	12th (4I) Ge[illegible]			191	53	55	28.560
100.25	7116	5.28	2499	6.03	13th (6L) Gear			190	56	58	28.540
104.23	7377	5.30	2501	6.26	14th (5I) Gear			191	56	59	28.540
102.04	6456	5.93	2499	5.35	15th (4H) Gear			191	56	58	28.540
102.78	5580	6.91	2499	4.50	16th (5H) Gear			191	56	58	28.540
103.02	5153	7.50	2499	4.02	**17th (6I) Gear**			191	56	58	28.540
102.72	4867	7.91	2500	3,79	**18th (7L) Gear**			191	56	59	28.540
98.27	3787	9.73	2501	2.91	**19th (6H) Gear**			191	56	59	28.540

LUGGING ABILITY IN RATED GEAR (14th 5I)

Crankshaft Speed rpm	2501	2251	2000	1746	1493	1244
Pounds Pull	7377	7842	8390	9165	9111	8820
Increase in Pull %	0	6	14	24	24	20
Horsepower	104.23	99.28	93.80	88.79	75.40	60.99
Miles Per Hour	5.30	4.75	4.19	3.63	3.10	2.59
Slip of Drivers %	6.26	6.71	7.15	7.88	7.88	7.59

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power 2 Hours	81.5
75% of Pull at Max. Power 10 Hours	83.5
50% of Pull at Max. Power 2 Hours	83.0
50% of Pull at Reduced Engine Speed 2 Hours	83.0
Bystander in 23rd 8I) gear	88.5

TIRES, BALLAST AND WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi	Two 20.8-38; 10; 22	Two 20.8-38; 10; 22
Ballast	**—Liquid (each)**	1448 lb	None
	Cast Iron (each)	1000 lb	None
Front Tires	—No., size, ply & psi	Two 11.00-16; 6; 32	Two 11.00-16; 6; 32
Ballast	**—Liquid (each)**	None	None
	Cast Iron (each)	None	None
Height of drawbar		22.5 in	22.5 in
Static weight with operator—rear		13570 lb	8675 lb
front		3920 lb	3920 lb
Total		17490 lb	12595 lb

Department of Agricultural Engineering

Dates of Test: May 7-14, 1979

Manufacturer: Massey-Ferguson Inc., 1901 Bell Avenue, Des Moines, Iowa 50315

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8356 **Fuel weight** 6.957 lbs/gal **Oil SAE** 20-20W **API service classification** SB/SE-CA/CD **To motor** 3.886 gal **Drained from motor** 3.224 gal **Transmission and final drive lubricant** MF Permatran **Total time engine was operated** 39.5 hours.

ENGINE Make Perkins Diesel **Type** Six cylinder vertical with turbocharger **Serial No.** TU3101N29596F **Crankshaft** lengthwise **Rated rpm** 2500 **Bore and stroke** 3.875" x 5.0" **Compression ratio** 16.0 to 1 **Displacement** 354 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** two full flow cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: Type standard **Serial No.** 9R 004209 **Tread width** rear 65" to 95" front 60" to 80" **Wheel base** 105.4" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 34.2" Vertical distance above roadway 43.3" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission selective gear fixed ratio with partial (3) range** operator controlled power shift **Advertised speeds mph** first 1.2 second 1.7 third 1.7 fourth 2.2 fifth 2.3 sixth 2.4 seventh 3.0 eighth 3.4 ninth 3.5 tenth 4.0 eleventh 4.4 twelfth 4.9 thirteenth 5.6 fourteenth 5.6 fifteenth 6.2 sixteenth 7.2 seventeenth 7.8 eighteenth 8.2 nineteenth 9.9 twentieth 11.4 twenty-first 11.6 twenty-second 14.6 twenty-third 16.2 twenty-fourth 20.7 reverse 2.2, 3.0, 4.4, 6.2 **Clutch** single dry disc operated by foot pedal **Brakes** single wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 135" left 135" **(on concrete surface without brake) right 180" left 180" Turning space diameter** (on concrete surface **with brake applied) right 294" left 294" (on concrete** surface without brake) right 381" left 381" **Power take-off** 1000 rpm at 2091 engine rpm and 540 rpm at 1992 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump was 143°F. Thirteen gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1310.**

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1311—MASSEY-FERGUSON 2745 DIESEL 24-SPEED ALSO 8-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crankshaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1243 rpm)								
143.40	2600	10.275	0.498	13.96	185	62	75	28.647
Standard Power Take-off Speed (1000 rpm)—One Hour								
132.21	2092	8.583	0.452	15.40	185	61	75	28.660
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
127.13	2710	9.530	0.522	13.34	182	61	76	......
0.00	2850	4.118	......	......	173	60	74	......
65.14	2778	6.602	0.705	9.87	178	60	75	......
143.00	2601	10.289	0.501	13.90	185	60	74	......
32.92	2809	5.274	1.114	6.24	176	62	76	......
96.49	2743	7.934	0.572	12.16	181	61	75	......
Av 77.45	2748	7.291	0.655	10.62	179	61	75	28.667

DRAWBAR PERFORMANCE

Hp	Drawbar pull lbs	Speed miles per hr	Crankshaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cooling med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 14th (5I) Gear											
122.28	8352	5.49	2600	5.97	10.224	0.582	11.96	186	55	70	28.915
75% of Pull at Maximum Power—Ten Hours 14th (5I) Gear											
100.07	6395	5.87	2723	4.18	8.987	0.625	11.13	184	55	67	28.975
50% of Pull at Maximum Power—Two Hours 14th (5I) Gear											
68.98	4271	6.06	2770	2.85	7.349	0.741	9.39	182	54	64	29.135
50% of Pull at Reduced Engine Speed—Two Hours 17th (6I) Gear											
68.99	4271	6.06	1998	2.77	5.606	0.565	12.31	182	56	72	29.125
MAXIMUM POWER IN SELECTED GEARS											
111.30	15386	2.71	2664	14.98	7th (2H) Gear			183	49	54	29.140
118.22	14126	3.14	2600	11.87	8th (3I) Gear			184	50	55	29.140
114.26	13700	3.13	2599	14.01	9th (4L) Gear			186	55	70	28.940
120.57	11863	3.81	2598	9.27	10th (5L) Gear			187	55	68	28.960
121.28	10829	4.20	2600	7.88	11th (3H) Gear			187	55	68	28.970
124.17	9883	4.71	2599	6.95	12th (4I) Gear			187	55	67	28.980
122.89	8386	5.50	2599	5.71	13th (6L) Gear			187	54	66	28.990
125.17	8519	5.51	2599	5.78	14th (5I) Gear			187	54	67	28.970
122.74	7484	6.15	2598	5.19	15th (4H) Gear			187	56	69	28.950
123.03	6433	7.17	2600	4.28	16th (5H) Gear			187	56	70	28.940
123.37	5944	7.78	2600	4.05	17th (6I) Gear			187	55	70	28.940
122.13	5577	8.21	2599	3.59	18th (7L) Gear			187	55	70	28.940

LUGGING ABILITY IN RATED GEAR (14th 5I)

Crankshaft Speed rpm	2599	2342	2081	1812	1556	1288
Pounds Pull	8519	9189	9868	10442	10511	10076
Increase in Pull %	0	8	16	23	23	18
Horsepower	125.17	121.00	114.63	105.11	90.71	72.30
Miles Per Hour	5.51	4.94	4.36	3.77	3.24	2.69
Slip of Drivers %	5.78	6.30	6.88	7.31	7.45	7.17

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power 2 Hours	86.0
75% of Pull at Max. Power 10 Hours	87.0
50% of Pull at Max. Power 2 Hours	85.0
50% of Pull at Reduced Engine Speed 2 Hours	82.0
Bystander in 22nd (7H) gear	96.0

TIRES, BALLAST AND WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi	Four 18.4-38; 10; 16	Four 18.4-38; 10; 16
Ballast	—Liquid (each)	1040 lb	None
	Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi	Two 11.00-16; 8; 40	Two 11.00-16; 8; 40
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	70 lb	None
Height of drawbar		22.5 in	22.5 in
Static weight with operator—rear		14520 lb	10360 lb
front		4970 lb	4830 lb
Total		19490 lb	15190 lb

Department of Agricultural Engineering

Dates of Test: May 7-16, 1979

Manufacturer: Massey-Ferguson Inc., 1901 Bell Avenue, Des Moines, Iowa 50315

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8356 **Fuel weight** 6.957 lbs/gal **Oil SAE** 20-20W **API service classification** SB/SE-CA/CC **To motor** 5.563 gal **Drained from motor** 4.846 gal **Transmission and final drive lubricant** MF Permatran **Total time engine was operated** 38.5 hours.

ENGINE Make Perkins Diesel **Type** Eight cylinder vee **Serial No.** XC22656U514224E **Crankshaft** lengthwise **Rated rpm** 2600 **Bore and stroke** 4.25" x 4.75" **Compression ratio** 16.5 to 1 **Displacement** 539 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** two paper cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** four thermostats.

CHASSIS: Type standard with duals **Serial No.** 9R 004056 **Tread width** rear 65" to 129" front 60" to 80" **Wheel base** 110" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 39.8" Vertical distance above roadway 41.4" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (3) range operator controlled power shift **Advertised speeds mph** first 1.2 second 1.7 third 1.7 fourth 2.2 fifth 2.4 sixth 2.5 seventh 3.1 eighth 3.5 ninth 3.6 tenth 4.1 eleventh 4.5 twelfth 5.0 thirteenth 5.7 fourteenth 5.8 fifteenth 6.4 sixteenth 7.4 seventeenth 8.0 eighteenth 8.4 nineteenth 10.2 twentieth 11.7 twenty-first 12.0 twenty-second 15.0 twenty-third 16.6 twenty-fourth 21.3 reverse 2.2, 3.1, 4.5, 6.4 **Clutch** dual dry disc operated by foot pedal **Brakes** single wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 152" left 152" (on concrete surface without brake) right 202" left 202" **Turning space diameter** (on concrete surface with brake applied) right 330" left 330" (on concrete surface without brake) right 428" left 428" **Power take-off** 1000 rpm at 2092 engine rpm and 540 rpm at 1992 engine rpm.

REPAIRS AND ADJUSTMENTS: Two fuel injectors were replaced during preliminary PTO test.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 159°F. Twelve gears were chosen between 15% slip and 10 mph. During the inspection excessive heat erosion signs were found on the exhaust valve side of piston number 1 and 3.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1311.

LOUIS I. LEVITICUS
Engineer-in Charge
G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1312—INTERNATIONAL 484 UTILITY DIESEL 8-SPEED

POWER TAKE-OFF PERFORMANCE

	Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION									
Rated Engine Speed—Two Hours (PTO Speed—555 rpm)									
	42.42	2200	2.868	0.473	14.79	184	58	75	29.093
Standard Power Take-off Speed (540 rpm)—One Hour									
	41.79	2141	2.822	0.472	14.81	184	59	75	29.095
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
	37.31	2276	2.590	0.486	14.40	183	59	75	......
	0.00	2415	0.922	......	......	181	58	74	......
	19.27	2351	1.737	0.630	11.10	181	59	75	......
	42.61	2200	2.869	0.471	14.85	185	58	74	......
	9.72	2384	1.334	0.959	7.29	181	59	75	......
	28.37	2311	2.136	0.527	13.28	182	59	75	......
Av	**22.88**	**2323**	**1.931**	**0.590**	**11.85**	**182**	**59**	**75**	**29.093**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 5th (1H) Gear											
36.00	2831	4.77	2198	5.75	2.823	0.549	12.75	188	61	82	28.625
75% of Pull at Maximum Power—Ten Hours 5th (1H) Gear											
29.97	2238	5.02	2282	4.36	2.420	0.565	12.39	186	67	84	28.688
50% of Pull at Maximum Power—Two Hours 5th (1H) Gear											
20.89	1507	5.20	2327	2.90	1.966	0.658	10.63	183	66	69	28.685
50% of Pull at Reduced Engine Speed—Two Hours 6th (2H) Gear											
20.70	1494	5.20	1694	2.87	1.716	0.580	12.07	186	70	76	28.690
MAXIMUM POWER IN SELECTED GEARS											
23.93	5500	1.63	2310	14.38	2nd (2L) Gear			185	62	84	28.650
36.20	4236	3.20	2198	8.81	3rd (3L) Gear			188	62	82	28.670
36.66	3239	4.24	2200	6.29	4th (4L) Gear			188	62	82	28.680
38.06	2988	4.78	2205	5.84	5th (1H) Gear			187	62	83	28.700
36.83	2068	6.68	2199	3.92	6th (2H) Gear			188	62	83	28.660

LUGGING ABILITY IN RATED GEAR (5th 1H)

Crankshaft Speed rpm	2205	1980	1757	1536	1333	1110
Pounds Pull	2988	3116	3302	3364	3364	3135
Increase in Pull %	0	4	11	13	13	5
Horsepower	38.06	35.56	33.31	29.58	25.69	20.02
Miles Per Hour	4.78	4.28	3.78	3.30	2.86	2.39
Slip of Drivers %	5.84	6.01	6.35	6.68	6.46	6.23

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power 2 Hours	96.5
75% of Pull at Max. Power 10 Hours	96.0
50% of Pull at Max. Power 2 Hours	97.0
50% of Pull at Reduced Engine Speed 2 Hours	94.0
Bystander in 8th (4H) gear	84.0

TIRES, BALLAST AND WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi	Two 14.9-28; 6; 16	Two 14.9-28; 6; 16
Ballast	—Liquid (each)	700 lb	None
	Cast Iron (each)	578 lb	None
Front Tires	—No., size, ply & psi	Two 9.5L-15; 6; 36	Two 9.5L-15; 6; 36
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	77 lb	None
Height of drawbar		12.5 in	12.5 in
Static Weight with operator	—rear	5710 lb	3155 lb
	front	2000 lb	1845 lb
	Total	7710 lb	5000 lb

Department of Agricultural Engineering

Dates of Test: May 22-31, 1979

Manufacturer: International Harvester Co., 401 North Michigan Ave., Chicago, Ill. 60611

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8401 **Fuel weight** 6.995 lbs/gal **Oil SAE** 30 **API service classification** SC-SE/CA-CD **To motor** 1.600 gal **Drained from motor** 1.568 gal **Transmission and final drive lubricant** I.H. Hytran fluid **Total time engine was operated** 36.5 hours.

ENGINE Make International Diesel **Type** 3 cylinder vertical **Serial No.** 179DT2D372290* **Crankshaft** lengthwise **Rated rpm** 2200 **Bore and stroke** 3.875" x 5.06" **Compression ratio** 15.0 to 1 **Displacement** 179 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one paper cartridge **Oil cooler** radiator for hydraulic and transmission oil **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard **Serial No.** B480003-B000956-X- **Tread width** rear 52" to 76" front 52" to 72" **Wheel base** 72.8" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 26.9" Vertical distance above roadway 29.7" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** first 1.3 second 1.8 third 3.6 fourth 4.6 fifth 5.1 sixth 7.0 seventh 13.7 eighth 17.6 reverse 1.6, 2.2, 4.3, 5.5 **Clutch** single dry disc operated by foot pedal **Brakes** single wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 108" left 108"(on concrete surface without brake) right 120" left 120"**Turning space diameter** (on concrete surface with brake applied) right 226" left 226" (on concrete surface without brake) right 250" left 250" **Power take-off** 540 rpm at 2141 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 145°F. Five gears were chosen betwen tire tangential pull limit and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1312.**

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1313—INTERNATIONAL 584 UTILITY DIESEL
ALSO INTERNATIONAL 584 ROWCROP DIESEL
8-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer Inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—580 rpm)								
52.54	2300	3.489	0.465	15.06	188	61	75	29.137
Standard Power Take-off Speed (540 rpm)—One Hour								
50.96	2140	3.345	0.459	15.23	190	62	77	29.140
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
46.33	2386	3.101	0.468	14.94	184	62	78	......
0.00	2557	1.081	......	......	178	63	80	......
23.98	2470	2.050	0.598	11.70	182	63	80	......
52.81	2300	3.478	0.461	15.18	190	64	80	......
12.14	2503	1.565	0.902	7.75	178	64	80	......
35.44	2430	2.556	0.505	13.86	184	63	80	.....
Av 28.45	**2441**	**2.305**	**0.567**	**12.34**	**183**	**63**	**80**	**29.123**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer Inches of Mercury
Maximum Available Power—Two Hours 5th (1H) Gear											
46.73	3451	5.08	2300	5.88	3.485	0.522	13.41	187	55	60	28.985
75% of Pull at Maximum Power—Ten Hours 5th (1H) Gear											
37.11	2573	5.41	2397	4.04	2.866	0.540	12.95	186	67	80	28.562
50% of Pull at Maximum Power—Two Hours 5th (1H) Gear											
25.99	1734	5.62	2456	2.76	2.341	0.630	11.10	182	71	85	28.490
50% of Pull at Reduced Engine Speed—Two Hours 6th (2H) Gear											
25.89	1726	5.62	1788	2.66	1.948	0.526	13.29	183	71	84	28.460
MAXIMUM POWER IN SELECTED GEARS											
32.36	6859	1.77	2410	12.91	2nd (2L) Gear			183	53	57	28.990
46.98	5141	3.43	2299	8.78	3rd (3L) Gear			187	54	59	28.980
46.26	**3849**	**4.51**	**2299**	**6.44**	**4th (4L) Gear**			**187**	**54**	**59**	**28.990**
47.47	**3513**	**5.07**	**2297**	**6.01**	**5th (1H) Gear**			**187**	**53**	**57**	**28.990**
47.47	**2508**	**7.10**	**2297**	**4.36**	**6th (2H) Gear**			**186**	**55**	**60**	**28.980**

LUGGING ABILITY IN RATED GEAR (5th 1H)

Crankshaft Speed rpm	2297	2070	1834	1622	1391	1152
Pounds Pull	3513	3690	3886	4040	4210	4150
Increase in Pull %	0	5	11	15	20	18
Horsepower	47.47	44.81	41.76	38.28	33.93	27.80
Miles Per Hour	5.07	4.55	4.03	3.55	3.02	2.51
Slip of Drivers %	6.01	6.25	6.62	6.87	7.11	7.11

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power 2 Hours	96.5
75% of Pull at Max. Power 10 Hours	96.0
50% of Pull at Max. Power 2 Hours	96.5
50% of Pull at Reduced Engine Speed 2 Hours	94.0
Bystander in 8th (4H) gear	85.0

TIRES, BALLAST AND WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi	Two 16.9-30; 6; 16	Two 16.9-30; 6; 16
Ballast	—Liquid (each)	935 lb	None
	Cast Iron (each)	605 lb	None
Front Tires	—No., size, ply & psi	Two 9.5L-15; 6; 36	Two 9.5L-15; 6; 36
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	52 lb	None
Height of drawbar		15.5 in	15.5 in
Static weight with operator	—rear	6750 lb	3670 lb
	front	2100 lb	1995 lb
	Total	8850 lb	5665 lb

Department of Agricultural Engineering

Dates of Test: May 24 to June 11, 1979

Manufacturer: International Harvester Co., 401 North Michigan Ave., Chicago, Illinois 60611

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8401 **Fuel weight** 6.995 lbs/gal **Oil SAE** 30 **API service classification** SC-SE/CA-CD **To motor** 2.056 gal **Drained from motor** 1.949 gal **Transmission and final drive lubricant** I.H. Hytran fluid **Total time engine was operated** 36.0 hours.

ENGINE Make International Diesel **Type** Four cylinder vertical **Serial No.** DT2D313257* **Crankshaft** lengthwise **Rated rpm** 2300 **Bore and stroke** 3.875" x 4.38" **Compression ratio** 15.3 to 1 **Displacement** 206 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one paper cartridge **Oil cooler** radiator for hydraulic and transmission oil **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type Standard **Serial No.** B500003-B001330-X- **Tread width** rear 56" to 76" front 48" to 80" **Wheel base** 77.7" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 27.4" Vertical distance above roadway 30.7" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** first 1.4 second 1.9 third 3.7 fourth 4.8 fifth 5.4 sixth 7.4 seventh 14.3 eighth 18.4 reverse 1.7, 2.3, 4.5, 5.7 **Clutch** single dry disc operated by foot pedal **Brakes** single wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 112" left 112" (on concrete surface without brake) right 122" left 122" **Turning space diameter** (on concrete surface with brake applied) right 235" left 235" (on concrete surface without brake) right 256" left 256" **Power take-off** 540 rpm at 2140 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 148°F. Five gears were chosen between tire tangential pull limit and 10 mph. During final inspection, slight pitting of the engine exhaust valve faces was noted.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1313.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1314—INTERNATIONAL 684 UTILITY DIESEL
ALSO INTERNATIONAL 684 ROWCROP DIESEL
8-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crankshaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—606 rpm)								
62.52	2400	4.204	0.470	14.87	191	65	75	28.790
Standard Power Take-off Speed (540 rpm)—One Hour								
58.75	2140	3.778	0.450	15.55	192	64	75	28.815
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
54.64	2468	3.706	0.474	14.74	188	64	75	......
0.00	2640	1.274	......	......	178	64	74	......
28.18	2545	2.423	0.601	11.63	182	64	75	......
62.70	2400	4.207	0.469	14.90	192	65	75	......
14.28	2578	1.866	0.914	7.65	179	64	75	......
41.66	2512	3.028	0.508	13.76	186	64	74	......
Av 33.58	**2524**	**2.751**	**0.573**	**12.21**	**184**	**64**	**75**	**28.810**

DRAWBAR PERFORMANCE

Hp	Drawbar pull lbs	Speed miles per hr	Crankshaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cooling med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 5th (1H) Gear											
54.56	3861	5.30	2400	5.84	4.110	0.527	13.27	193	58	76	29.115
75% of Pull at Maximum Power—Ten Hours 5th (1H) Gear											
43.84	2979	5.52	2454	4.08	3.367	0.537	13.02	189	58	77	29.017
50% of Pull at Maximum Power—Two Hours 5th (1H) Gear											
30.44	1989	5.74	2516	2.70	2.698	0.620	11.28	185	60	79	29.080
50% of Pull at Reduced Engine Speed—Two Hours 6th (2H) Gear											
30.61	1993	5.76	1836	2.60	2.287	0.523	13.38	186	59	78	29.045
MAXIMUM POWER IN SELECTED GEARS											
33.94	6858	1.86	2497	11.50	2nd (2L) Gear			186	55	66	29.140
54.45	5765	3.54	2398	9.37	3rd (3L) Gear			194	58	72	29.140
54.13	4324	4.69	2398	6.58	4th (4L) Gear			193	57	71	29.140
55.92	3967	5.29	2398	5.97	5th (1H) Gear			192	55	66	29.140
55.78	2824	7.41	2400	4.07	6th (2H) Gear			192	58	73	29.130

LUGGING ABILITY IN RATED GEAR (5th 1H)						
Crankshaft Speed rpm	2398	2159	1923	1683	1435	1202
Pounds Pull	3967	4177	4219	4422	4399	4345
Increase in Pull %	0	5	6	11	11	10
Horsepower	55.92	52.78	47.43	43.31	36.77	30.44
Miles Per Hour	5.29	4.74	4.22	3.67	3.13	2.63
Slip of Drivers %	5.97	6.58	6.58	6.82	6.82	6.82

TRACTOR SOUND LEVEL WITHOUT CAB	**dB(A)**
Maximum Available Power 2 Hours	97.0
75% of Pull at Max. Power 10 Hours	97.5
50% of Pull at Max. Power 2 Hours	97.0
50% of Pull at Reduced Engine Speed 2 Hours	93.5
Bystander in 8th (4H) gear	86.0

TIRES, BALLAST AND WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi	Two 16.9-30; 6; 16	Two 16.9-30; 6; 16
Ballast	—Liquid (each)	935 lb	None
	Cast Iron (each)	953 lb	None
Front Tires	—No., size, ply & psi	Two 9.5L-15; 6; 36	Two 9.5L-15; 6; 36
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	25 lb	None
Height of drawbar		14.5 in	14.5 in
Static weight with operator—rear		7710 lb	3935 lb
	front	1950 lb	1900 lb
	Total	9660 lb	5835 lb

Department of Agricultural Engineering

Dates of Test: May 24 to June 4, 1979

Manufacturer: International Harvester Co., 401 North Michigan Ave., Chicago, Ill. 60611

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8401 **Fuel weight** 6.995 lbs/gal **Oil SAE** 30 **API service classification** SC-SE/CA-CD **To motor** 2.063 gal **Drained from motor** 2.031 gal **Transmission and final drive lubricant** I.H. Hytran fluid **Total time engine was operated** 33.0 hours.

ENGINE Make International Diesel **Type** Four cylinder vertical **Serial No.** DT2D472004* **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 3.875" x 5.06" **Compression ratio** 15.0 to 1 **Displacement** 239 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one paper cartridge **Oil cooler** radiator for hydraulic and transmission oil **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type Standard **Serial No.** B510005-B001149-X- **Tread width** rear 52" to 76" front 54" to 74" **Wheel base** 88" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 29.1" Vertical distance above roadway 30.3" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** first 1.5 second 2.0 third 3.9 fourth 5.0 fifth 5.6 sixth 7.7 seventh 14.9 eighth 19.2 **reverse** 1.8, 2.4, 4.7, 6.0 **Clutch** single dry disc operated by foot pedal **Brakes** single wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 133" left 133" (on concrete surface without brake) right 153" left 153" **Turning space diameter** (on concrete surface with brake applied) right 278" left 278" (on concrete surface without brake) right 318" left 318" **Power take-off** 540 rpm at 2140 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 144°F. Five gears were chosen between tire tangential pull limit and 10 mph. During final inspection, slight pitting of the engine exhaust valve faces was noted.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1314.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

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NEBRASKA TRACTOR TEST 1315—INTERNATIONAL 784 ROWCROP DIESEL 8-SPEED

POWER TAKE-OFF PERFORMANCE—540 RPM

	Hp	Crank-shaft speed rpm	Fuel Consumption		Hp-hr per gal	Temperature Degrees F			Barometer inches of Mercury
			Gal per hr	Lb per hp-hr		Cooling medium	Air wet bulb	Air dry bulb	
	MAXIMUM POWER AND FUEL CONSUMPTION								
	Rated Engine Speed—Two Hours (PTO Speed—605 rpm)								
	65.47	2400	4.267	0.456	15.34	190	59	75	29.050
	Standard Power Take-off Speed (504 rpm)—One Hour								
	61.28	2140	3.907	0.446	15.68	190	59	75	29.045
	VARYING POWER AND FUEL CONSUMPTION—Two Hours								
	57.64	2484	3.830	0.465	15.05	186	59	75	......
	0.00	2623	1.321	......	......	178	60	75	......
	29.74	2562	2.548	0.599	11.67	182	59	74	......
	65.64	2400	4.327	0.461	15.17	190	60	75	......
	14.99	2587	1.947	0.909	7.70	179	59	75	......
	43.98	2530	3.139	0.499	14.01	184	59	74	......
Av	**35.33**	**2531**	**2.852**	**0.565**	**12.39**	**184**	**59**	**75**	**29.047**

OPTIONAL POWER TAKE-OFF—1000 RPM

	Hp	Crank-shaft speed rpm	Fuel Consumption		Hp-hr per gal	Temperature Degrees F			Barometer inches of Mercury
			Gal per hr	Lb per hp-hr		Cooling medium	Air wet bulb	Air dry bulb	
	MAXIMUM POWER AND FUEL CONSUMPTION								
	Rated Engine Speed—Two Hours (PTO Speed—1096rpm)								
	67.48	2400	4.272	0.443	15.80	189	60	75	29.060
	Standard Power Take-off Speed (1000 rpm)—One Hour								
	64.09	2190	3.990	0.435	16.06	191	60	75	29.045
	VARYING POWER AND FUEL CONSUMPTION—Two Hours								
	59.40	2486	3.830	0.451	15.51	186	60	75	......
	0.00	2622	1.330	......	......	179	61	76	......
	30.64	2564	2.548	0.582	12.03	184	60	76	......
	66.94	2400	4.280	0.447	15.64	190	61	77	......
	15.51	2592	1.939	0.874	8.00	180	61	77	......
	45.39	2532	3.169	0.488	14.32	186	62	78	......
Av	**36.31**	**2533**	**2.849**	**0.549**	**12.75**	**184**	**61**	**76**	**29.017**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption		Hp-hr per gal	Temp Degrees F			Barometer inches of Mercury
					Gal per hr	Lb per hp-hr		Cool-ing med	Air wet bulb	Air dry bulb	
Maximum Available Power—Two Hours 5th (1H) Gear											
56.83	4115	5.18	2399	5.96	4.289	0.528	13.25	191	58	63	28.790
75% of Pull at Maximum Power—Ten Hours 5th (1H) Gear											
46.19	3182	5.44	2484	4.55	3.617	0.548	12.77	187	52	63	28.999
50% of Pull at Maximum Power—Two Hours 5th (1H) Gear											
32.23	2144	5.64	2534	3.12	2.913	0.632	11.07	185	57	61	28.805
50% of Pull at Reduced Engine Speed—Two Hours 6th (2H) Gear											
32.00	2125	5.65	1955	3.08	2.538	0.555	12.61	185	57	63	28.815
MAXIMUM POWER IN SELECTED GEARS											
41.52	8105	1.92	2487	13.75	2nd (2L) Gear			186	49	56	29.130
55.45	6630	3.14	2400	10.23	3rd (3L) Gear			192	59	63	28.780
56.60	4834	4.39	2400	6.79	4th (4L) Gear			192	60	64	28.750
58.65	4244	5.18	2402	6.09	5th (1H) Gear			190	58	62	28.790
58.36	3202	6.83	2402	4.44	6th (2H) Gear			192	58	63	28.790

LUGGING ABILITY IN RATED GEAR (5th 1H)

Crankshaft Speed rpm	2402	2157	1924	1694	1432	1196
Pounds Pull	4244	4390	4514	4664	4811	4633
Increase in Pull %	0	3	6	10	13	9
Horsepower	58.65	54.40	46.69	45.11	39.23	31.64
Miles Per Hour	5.18	4.65	4.13	3.63	3.06	2.56
Slip of Drivers %	6.09	6.15	6.54	6.79	6.92	6.67

Department of Agricultural Engineering

Dates of Test: May 24 to June 2, 1979

Manufacturer: International Harvester Co., 401 North Michigan Ave., Chicago, Ill. 60611

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8401 **Fuel weight** 6.995 lbs/gal **Oil SAE** 30 **API service classification** SC-SE/CA-CD **To motor** 2.034 gal **Drained from motor** 1.734 gal **Transmission and final drive lubricant** I.H. Hytran fluid **Total time engine was operated** 44.0 hours.

ENGINE Make International Diesel **Type** Four cylinder vertical **Serial No.** 246D12D114055* **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 3.937" x 5.062" **Compression ratio** 15.5 to 1 **Displacement** 246 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one paper cartridge **Oil cooler** radiator for hydraulic and transmission oil **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard **Serial No.** B5300004-B001238-X- **Tread width** rear 52" to 76" front 54" to 74" **Wheel base** 88" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 28.1" Vertical distance above roadway 31.6" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** first 1.7 second 2.1 third 3.5 fourth 4.7 fifth 5.5 sixth 7.1 seventh 11.6 eighth 15.6 reverse 2.5, 3.2, 5.2, 7.1 **Clutch** single dry disc operated by foot pedal **Brakes** single wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 129" left 129" (on concrete surface without brake) right 153" left 153" **Turning space diameter** (on concrete surface with brake applied) right 268" left 268" (on concrete surface without brake) right 317" left 317" **Power take-off** 540 rpm at 2140 engine rpm and 1000 rpm at 2190 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 148°F. Five gears were chosen between tire tangential pull limit and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1315.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
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Board of Tractor Test Engineers

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continued on next page

NEBRASKA TRACTOR TEST 1315—INTERNATIONAL 784 ROWCROP DIESEL 8-SPEED

continued from previous page

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power 2 Hours	97.5
75% of Pull at Max. Power 10 Hours	97.5
50% of Pull at Max. Power 2 Hours	97.5
50% of Pull at Reduced Engine Speed 2 Hours	94.5
Bystander in 8th (4H) gear	87.0

TIRES, BALLAST AND WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi	Two 18.4-30; 6; 16	Two 18.4-30; 6; 16
Ballast	—Liquid (each)	1160 lb	None
	Cast Iron (each)	740 lb	None
Front Tires	—No., size, ply & psi	Two 9.5L-15; 6; 36	Two 9.5L-15; 6; 36
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	15 lb	None
Height of drawbar		15.5 in	15.5 in
Static weight with operator—rear		7970 lb	4170 lb
	front	1950 lb	1920 lb
	Total	9920 lb	6090 lb

NEBRASKA TRACTOR TEST 1316—
INTERNATIONAL HYDRO 84 UTILITY DIESEL
ALSO INTERNATIONAL HYDRO 84 ROWCROP DIESEL

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Air wet bulb	Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—584 rpm)								
58.73	2401	4.307	0.513	13.64	180	60	75	29.007
Standard Power Take-off Speed (540 rpm)—One Hour								
56.68	2222	4.044	0.499	14.01	180	60	75	29.010
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
51.56	2479	3.903	0.530	13.21	172	60	75	......
0.00	2622	1.643	......	......	156	59	75	......
26.58	2560	2.741	0.721	9.70	161	60	76	......
59.18	2400	4.327	0.512	13.67	178	59	75	......
13.45	2590	2.209	1.149	6.09	161	59	75	......
39.38	2526	3.285	0.584	11.99	168	59	75	......
Av 31.69	**2529**	**3.018**	**0.666**	**10.50**	**166**	**59**	**75**	**29.000**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cooling med	Air wet bulb	Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours, Speed Setting—6.0 MPH Hi Range											
42.90	2733	5.89	2401	4.43	4.235	0.691	10.13	195	65	78	28.530
75% of Pull at Maximum Power—Two Hours, Speed Setting—6.0 MPH Hi Range											
35.15	2032	6.49	2495	2.99	3.581	0.713	9.82	177	65	83	28.679

Department of Agricultural Engineering

Dates of Test: May 25 to June 6, 1979

Manufacturer: International Harvester Co., 401 North Michigan Ave., Chicago, Ill. 60611

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8401 **Fuel weight** 6.995 lbs/gal **Oil SAE** 30 **API service classification** SC-SE/CA-CD **To motor** 2.273 gal **Drained from motor** 1.952 gal **Transmission and final drive lubricant** I.H. Hytral fluid **Total time engine was operated** 38.5 hours.

ENGINE Make International Diesel **Type** Four cylinder vertical **Serial No.** 246DT20114054* **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 3.937" x 5.062" **Compression ratio** 15.5 to 1 **Displacement** 246 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one paper cartridge **Oil cooler** radiator for hydraulic and transmission fluid **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard **Serial No.** B600003-B00719-X- **Tread width** rear 52" to 76" front 54" to 74" **Wheel base** 88" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 30.1" Vertical distance above roadway 30.2" Horizontal distance from center of rear wheel tread 0"

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NEBRASKA TRACTOR TEST 1316—
INTERNATIONAL HYDRO 84 UTILITY DIESEL
ALSO INTERNATIONAL HYDRO 84 ROWCROP DIESEL

continued from previous page

50% of Pull at Maximum Power—Two Hours, Speed Setting—6.0 MPH Hi Range											
25.50	1365	7.01	2538	1.94	3.056	0.838	8.34	189	70	89	28.640
50% of Pull at Reduced Engine Speed—Two Hours, Speed Setting—11.1 MPH Hi Range at 2400 Engine RPM											
25.24	1361	6.95	1496	1.81	2.448	0.678	10.31	210	68	92	28.620
MAXIMUM POWER IN SELECTED GEARS **The variable drive control was set by mfr. to give the travel speeds shown)**											
41.41	6572	2.36	2402	13.71	Lo Range			184	64	71	28.560
41.57	5145	3.03	2401	9.52	Lo Range			210	68	80	28.660
41.53	4371	3.56	2400	7.64	Lo Range			209	67	79	28.660
41.14	3822	4.04	2400	6.41	Lo Range			210	67	78	28.660
37.28	3134	4.46	2400	5.20	Hi Range			208	66	76	28.660
41.24	3073	5.03	2399	4.89	Hi Range			202	64	74	28.660
42.67	2904	5.51	2399	4.71	Hi Range			197	63	71	28.660
43.35	2699	6.02	2401	4.27	Hi Range			195	60	67	28.660
43.14	2490	6.50	2401	3.90	Hi Range			207	69	82	28.650
43.49	2337	6.98	2403	3.58	Hi Range			207	70	84	28.650
43.59	2152	7.60	2401	3.20	Hi Range			206	70	85	28.650
43.37	1977	8.23	2399	2.88	Hi Range			207	71	87	28.650

LUGGING ABILITY IN SPEED SETTING—6.0 MPH HI RANGE						
Crankshaft Speed rpm	2401	2159	1921	1676	1439	1198
Pounds Pull	2699	2884	2991	3188	3168	3124
Increase in Pull %	0	7	11	18	17	16
Horsepower	43.35	40.88	37.04	33.01	27.79	21.71
Miles Per Hour	6.02	5.32	4.64	3.88	3.29	2.61
Slip of Drivers %	4.27	4.77	4.89	5.26	5.26	5.26

TRACTOR SOUND LEVEL WITHOUT CAB	**dB(A)**
Maximum Available Power 2 Hours	99.0
75% of Pull at Max. Power 10 Hours	98.5
50% of Pull at Max. Power 2 Hours	99.5
50% of Pull at Reduced Engine Speed 2 Hours	95.5
Bystander in Hi Range	88.0

to the right/left **Hydraulic control system** direct engine drive **Transmission** Infinitely variable hydrostatic using variable displacement pump and motor. A range transmission provides Hi and Lo range **Advertised speeds mph** Lo range 0-6.9 Hi range 0-18.9 reverse Lo range 0-3.0, Hi range 0-8.0 **Clutch** none—hydrostatic drive can be controlled by foot pedal **Brakes** single wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 134" left 134" (on concrete surface without brake) right 153" left 153" **Turning space diameter** (on concrete surface with brake applied) right 278" left 278"(on concrete surface without brake) right 316" left 316" **Power take-off** 540 rpm at 2222 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 152°F. Twelve travel speeds were chosen between tire tangential pull limit and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1316**.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
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Board of Tractor Test Engineers

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TIRES, BALLAST AND WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi	Two 16.9-28; 6; 16	Two 16.9-28; 6; 16
Ballast	—Liquid (each)	900 lb	None
	Cast Iron (each)	625 lb	None
Front Tires	—No., size, ply & psi	Two 9.5L-15; 6; 36	Two 9.5L-15; 6; 36
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	32 lb	None
Height of drawbar		14.5 in	14.5 in
Static weight with operator—rear		7030 lb	3980 lb
front		2090 lb	2025 lb
Total		9120 lb	6005 lb

NEBRASKA TRACTOR TEST 1317—INTERNATIONAL 4786 DIESEL 10-SPEED

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption		Hp-hr per gal	Temp Degrees F			Barometer inches of Mercury
					Gal per hr	Lb per hp-hr		Cool-ing med	Air wet bulb	Air dry bulb	
Maximum Available Power—Two Hours 6th (3H) Gear											
258.20	15680	6.18	2600	3.60	20.175	0.547	12.80	188	70	29.100	
75% of Pull at Maximum Power—Ten Hours 6th (3H) Gear											
210.04	12086	6.52	2713	2.51	17.623	0.587	11.92	183	56	72	29.003
50% of Pull at Maximum Power—Two Hours 6th (3H) Gear											
144.70	8051	6.74	2781	1.70	14.671	0.709	9.86	177	54	72	29.060
50% of Pull at Reduced Engine Speed—Two Hours 8th (4H) Gear											
144.00	8018	6.73	1680	1.63	10.400	0.505	13.85	182	55	73	29.040
MAXIMUM POWER IN SELECTED GEARS											
192.11	33468	2.15	2710	14.78	2nd (1H) Gear			175	60	68	28.740
227.87	31773	2.69	2610	14.12	3rd (2L) Gear			182	60	71	28.750
254.08	25783	3.70	2599	6.89	4th (2H) Gear			186	51	65	29.110
265.55	20790	4.79	2599	4.79	5th (3L) Gear			186	52	66	29.110
265.41	16116	6.18	2600	3.52	6th (3H) Gear			186	50	63	29.130
265.02	12263	8.10	2598	2.60	7th (4L) Gear			186	51	65	29.110

LUGGING ABILITY IN RATED GEAR (6th 3H)

Crankshaft Speed rpm	2600	2338	2079	1819	1550	1297
Pounds Pull	16116	18124	19897	20696	20053	17821
Increase in Pull %	0	12	23	28	24	11
Horsepower	265.41	266.94	259.32	235.36	194.44	145.47
Miles Per Hour	6.18	5.52	4.89	4.26	3.64	3.06
Slip of Drivers %	3.52	4.12	4.42	4.87	4.72	4.12

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power 2 Hours	82.5
75% of Pull at Max. Power 10 Hours	81.0
50% of Pull at Max. Power 2 Hours	80.5
50% of Pull at Reduced Engine Speed 2 Hours	76.5
Bystander in 10th (5H) gear	95.5

TIRES, BALLAST AND WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi	Four 23.1-30; 8; 14	Four 23.1-30; 8; 14
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	48 lb	None
Front Tires	—No., size, ply & psi	Four 23.1-30; 8; 14	Four 23.1-30; 8; 14
Ballast	—Liquid (each)	1980 lb	None
	Cast Iron (each)	None	None
Height of drawbar		20.0 in	20.0 in
Static weight with operator	—rear	14150 lb	13960 lb
	front	20200 lb	16240 lb
	Total	34350 lb	30200 lb

Department of Agricultural Engineering

Dates of Test: May 23-29, 1979

Manufacturer: International Harvester Co., 401 North Michigan Ave., Chicago, Ill. 60611

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8401 **Fuel weight** 6.995 lbs/gal **Oil SAE** 30 **API service classification** SC-SE/CA-CD **To motor** 5.447 gal **Drained from motor** 4.711 gal **Transmission and final drive lubricant** I.H. Hytran fluid **Total time engine was operated** 29.0 hours.

ENGINE Make International Diesel **Type** Eight cylinder vee with turbocharger **Serial No.** 800TT2U-005562* **Crankshaft** lengthwise **Rated rpm** 2600 **Bore and stroke** 5.313" x 4.500" **Compression ratio** 15.6 to 1 **Displacement** 798 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** two paper cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic, transmission and dropbox oil **Fuel filter** two paper cartridges **Muffler** none **Cooling medium temperature control** two thermostats.

CHASSIS: Type Four wheel drive with duals **Serial No.** 2990004U000665 **Tread width** rear 68.1" to 125.1" front 68.1" to 125.1" **Wheel base** 118" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 63.4" Vertical distance above roadway 43.8" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** first 1.8 second 2.3 third 3.0 fourth 3.8 fifth 4.8 sixth 6.1 seventh 8.0 eighth 10.1 ninth 12.7 tenth 16.1 reverse 1.8, 2.3 **Clutch** double dry disc operated by foot pedal **Brakes** single wet disc hydraulically operated by one foot pedal **Steering** hydrostatic **Turning radius** (on concrete surface without brake) right 249" left 249" **Turning space diameter** (on concrete surface without brake) right 550" left 550" **Power take-off** none.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 144°F. Six gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1317.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1318—WHITE 4-210 FIELD BOSS DIESEL 18-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1000 rpm)								
182.44	2800	12.792	0.490	14.26	181	66	75	28.787
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
158.80	2869	11.065	0.487	14.35	178	66	75	......
0.00	3014	4.482	......	......	174	66	75	......
81.81	2952	7.514	0.642	10.89	177	66	76	......
183.81	2801	12.755	0.485	14.41	182	66	73	......
41.31	2981	5.927	1.004	6.97	175	66	76	......
120.84	2912	9.135	0.529	13.23	178	67	76	......
Av 97.76	**2921**	**8.480**	**0.607**	**11.53**	**177**	**66**	**75**	**28.783**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 11th (4D) Gear											
158.77	10120	5.88	2799	3.06	12.866	0.567	12.34	190	74	82	28.740
75% of Pull at Maximum Power—Ten Hours 11th (4D) Gear											
126.70	7744	6.14	2896	2.31	10.472	0.578	12.10	183	72	82	28.554
50% of Pull at Maximum Power—Two Hours 11th (4D) Gear											
86.65	5179	6.27	2944	1.80	8.452	0.682	10.25	180	62	72	28.735
50% of Pull at Reduced Engine Speed—Two Hours 15th (5O) Gear											
86.28	5151	6.28	1680	1.63	6.040	0.490	14.28	181	65	79	28.775
MAXIMUM POWER IN SELECTED GEARS											
140.19	22934	2.29	2818	14.91	2nd (1D) Gear			183	59	69	28.710
145.79	21369	2.56	2798	11.33	3rd (2U) Gear			186	75	85	28.730
151.84	19316	2.95	2798	7.65	4th (1O) Gear			187	74	84	28.740
158.09	18184	3.26	2798	6.64	5th (2D) Gear			186	74	83	28.740
157.12	16219	3.63	2797	5.47	6th (3U) Gear			187	74	83	28.740
157.93	14933	3.97	2799	4.79	7th (2O) Gear			186	70	78	28.760
161.70	13615	4.45	2798	4.19	8th (3D) Gear			186	70	77	28.760
161.26	12521	4.83	2800	3.72	9th (4U) Gear			185	70	77	28.760
158.34	11050	5.37	2800	3.18	10th (3O) Gear			185	70	77	28.760
162.25	10333	5.89	2800	3.02	11th (4D) Gear			185	67	71	28.770
155.40	8235	7.08	2800	2.47	12th (4O) Gear			186	73	81	28.750
157.76	8220	7.20	2799	2.31	13th (5U) Gear			186	74	82	28.750
158.75	6807	8.75	2798	1.84	14th (5D) Gear			186	74	82	28.750

LUGGING ABILITY IN RATED GEAR (11th 4D)

Crankshaft Speed rpm	2800	2526	2248	1963	1680	1395	1113
Pounds Pull	10333	11357	12234	12831	13449	13932	13695
Increase in Pull %	0	10	18	24	30	35	33
Horsepower	162.25	160.34	153.26	139.95	125.29	107.49	84.38
Miles Per Hour	5.89	5.29	4.70	4.09	3.49	2.89	2.31
Slip of Drivers %	3.02	3.34	3.49	3.96	4.11	4.41	4.26

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power 2 Hours	78.5
75% of Pull at Max. Power 10 Hours	81.0
50% of Pull at Max. Power 2 Hours	81.5
50% of Pull at Reduced Engine Speed 2 Hours	79.5
Bystander in 18th (6O) gear	93.0

TIRES, BALLAST AND WEIGHT		**Without Ballast**
Rear Tires	—No., size, ply & psi	Four 18.4-38; 8; 12
Ballast	—Liquid (each)	None
	—Cast Iron (each)	None
Front Tires	—No., size, ply & psi	Four 18.4-38; 8; 12
Ballast	—Liquid (each)	None
	—Cast Iron (each)	None
Height of drawbar		22 in
Static weight with operator	—rear	9660 lb
	front	14075 lb
	total	23735 lb

Department of Agricultural Engineering

Dates of Test: June 12-20, 1979

Manufacturer: White Farm Euipment Co., 2625 Butterfield Road, Oakbrook, Illinois 60521

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8401 **Fuel weight** 6.995 lbs/gal **Oil SAE** 10W-30 **API service classification** SD-SE/CC-CD **To motor** 4.359 gal **Drained from motor** 1.867 gal **Transmission and final drive lubricant** Universal Tractor Hydraulic-Transfnission Fluid **Total time engine was operated** 36.0 hours.

ENGINE Make Caterpillar Diesel **Type** Eight cylinder vee **Serial No.** 90N36922 **Crankshaft** lengthwise **Rated rpm** 2800 **Bore and stroke** 4.5" x 5.0" **Compression ratio** 16.5 to 1 **Displacement** 636 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** two full flow cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper cartridge **Muffler** underhood **Cooling medium temperature control** two thermostats.

CHASSIS: Type Four wheel drive with duals **Serial No.** 275804-418 **Tread width** rear 63" to 126" front 63" to 126" **Wheel base** 117.8" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 72.4" Vertical distance above roadway 43.7" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (3) range operator controlled power shift **Advertised speeds mph** first 2.2 second 2.6 third 2.8 fourth 3.2 fifth 3.4 sixth 3.8 seventh 4.1 eighth 4.6 ninth 5.0 tenth 5.5 eleventh 6.0 twelfth 7.2 thirteenth 7.3 fourteenth 8.8 fifteenth 10.5 sixteenth 12.7 seventeenth 15.2 eighteenth 18.3 reverse 2.5, 3.1, 3.7, 4.4, 5.3, 6.4 **Clutch** dual dry disc operated by foot pedal **Brakes** single wet disc hydraulically operated by foot pedal **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 210" left 210" **Turning space diameter** (on concrete surface without brake) right 450" left 450" **Power take-off** 1000 rpm at 2800 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 162°F. Thirteen gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1318.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1319—INTERNATIONAL 3388 DIESEL 16-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1159 rpm)								
130.61	2400	8.381	0.449	15.58	189	67	75	28.850
Standard Power Take-off Speed (1000 rpm)—One Hour								
128.59	2070	7.631	0.415	16.85	189	66	75	28.860
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
115.24	2494	7.779	0.472	14.82	187	67	76	......
0.00	2640	3.013	......	......	182	66	75	......
59.44	2574	5.426	0.639	10.95	184	67	75	......
130.88	2400	8.361	0.447	15.65	188	67	75	......
30.26	2607	4.166	0.964	7.27	183	67	75	......
87.98	2534	6.583	0.524	13.36	186	67	75	......
Av 70.63	2542	5.888	0.584	12.00	185	67	75	28.873

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 8th (4LoDD) Gear											
111.75	6864	6.10	2400	2.30	8.268	0.518	13.52	190	69	77	28.855
75% of Pull at Maximum Power—Ten Hours 8th (4LoDD) Gear											
89.92	5232	6.44	2519	1.75	7.389	0.575	12.17	187	70	77	28.793
50% of Pull at Maximum Power—Two Hours 8th (4LoDD) Gear											
61.24	3483	6.59	2568	1.37	6.071	0.694	10.09	185	65	71	28.870
50% of Pull at Reduced Engine Speed—Two Hours 11th (2HiTA) Gear											
61.80	3508	6.61	1501	1.24	4.554	0.516	13.57	186	72	78	28.900
MAXIMUM POWER IN SELECTED GEARS											
93.58	16764	2.09	2490	11.54	2nd (1LoDD) Gear			186	63	66	28.870
110.65	14552	2.85	2402	6.83	3rd (2LoTA) Gear			189	68	76	28.880
112.14	12358	3.40	2401	4.96	4th (2LoDD) Gear			190	68	77	28.880
113.37	9765	4.35	2401	3.34	5th (3LoTA) Gear			189	66	73	28.870
113.40	8306	5.12	2400	2.76	6th (3LoDD) Gear			190	66	73	28.870
113.16	8166	5.20	2399	2.76	7th (4LoTA) Gear			190	67	74	28.860
113.79	6983	6.11	2400	2.35	8th (4LoDD) Gear			190	67	74	28.860
114.42	6430	6.67	2399	2.18	9th (1HiTA) Gear			190	67	74	28.880
113.07	5413	7.83	2398	1.67	10th (1HiDD) Gear			190	67	75	28.880

LUGGING ABILITY IN RATED GEAR (8th 4LoDD)						
Crankshaft Speed rpm	2400	2162	1920	1684	1445	1203
Pounds Pull	6983	7835	8323	8682	8305	7551
Increase in Pull %	0	12	19	24	19	8
Horsepower	113.79	114.61	107.91	98.55	81.00	61.48
Miles Per Hour	6.11	5.49	4.86	4.26	3.66	3.05
Slip of Drivers %	2.35	2.68	2.68	3.01	2.85	2.51

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power 2 Hours	78.0
75% of Pull at Max. Power 10 Hours	78.5
50% of Pull at Max. Power 2 Hours	78.0
50% of Pull at Reduced Engine Speed 2 Hours	75.5
Bystander in 15th (4HiTA) gear	87.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi	Two 18.4R38; 8; 16	Two 18.4R38; 8; 16
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	130 lb	None
Front Tires	—No., size, ply & psi	Two 18.4R38; 8; 16	Two 18.4R38; 8; 16
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	85 lb	None
Height of drawbar		20.5 in	20.5 in
Static weight with operator—rear		8080 lb	7820 lb
	front	9770 lb	9600 lb
	Total	17850 lb	17420 lb

Department of Agricultural Engineering

Dates of Test: August 21 to 27, 1979

Manufacturer: International Harvester Company, 401 North Michigan Avenue, Chicago, IL 60611

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8407 **Fuel weight** 7.000 lbs/gal **Oil** SAE 30 **API service classification** SC/SE-CA/CD **To motor** 3.932 gal **Drained from motor** 3.723 gal **Transmission and final drive lubricant** I.H. Hytran Fluid **Total time engine was operated** 37.0 hours.

ENGINE Make International Diesel **Type** 6 cylinder vertical with turbocharger **Serial No.** 437TT2U101187* **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 4.300" x 5.000" **Compression ratio** 16.0 to 1 **Displacement** 436 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** two paper cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type four wheel drive **Serial No.** 2880003U8820* **Tread width** rear 59.8" to 104" front 59.8" to 104" **Wheel base** 110" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 60.9" Vertical distance above roadway 41.9" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph** first 1.8 second 2.2 third 2.9 fourth 3.4 fifth 4.3 sixth 5.0 seventh 5.1 eighth 5.9 ninth 6.5 tenth 7.6 eleventh 10.1 twelfth 11.9 thirteenth 14.9 fourteenth 17.4 fifteenth 17.7 sixteenth 20.7 reverse 3.2, 3.7, 5.0, 5.8, 7.3, 8.6, 8.7, 10.2 **Clutch** single dry disc hydraulically operated by foot pedal **Brakes** multiple wet disc hydraulically operated by foot pedal **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 194.4" left 194.4"**Turning space diameter** (on concrete surface without brake) right 432.2" left 432.2"**Power take-off** 1000 rpm at 2070 engine rpm and 540 rpm at 2105 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 165°F. Nine gears were chosen between 15% slip and 10 mph. The pull in 2nd (1LoDD) gear was limited to avoid tractor bouncing.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1319.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1320—INTERNATIONAL 3588 DIESEL 16-SPEED

POWER TAKF OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1159 rpm)								
150.41	2400	9.590	0.446	15.68	189	64	75	28.820
Standard Power Take-off Speed (1000 rpm)—One Hour								
152.07	2071	8.957	0.412	16.98	191	64	75	28.820
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
131.35	2468	8.786	0.468	14.95	187	65	75	......
0.00	2650	3.279	......	......	180	65	75	......
68.44	2566	6.090	0.623	11.24	183	65	75	......
150.53	2400	9.566	0.445	15.74	192	66	76	......
34.81	2611	4.731	0.951	7.36	182	66	76	......
100.88	2522	7.423	0.515	13.59	186	66	76	.....
Av 81.00	2536	6.646	0.574	12.19	185	66	75	28.817

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 8th (4LoDD) Gear											
126.15	7777	6.08	2402	2.50	9.607	0.533	13.13	190	67	72	28.915
75% of Pull at Maximum Power—Ten Hours 8th (4LoDD) Gear											
101.71	5994	6.36	2495	1.83	8.339	0.574	12.20	189	76	82	28.606
50% of Pull at Maximum Power—Two Hours 8th (4LoDD) Gear											
69.91	4012	6.53	2547	1.10	6.786	0.679	10.30	185	72	76	28.900
50% of Pull at Reduced Engine Speed—Two Hours 11th (2HiTA) Gear											
70.05	4011	6.55	1492	1.10	5.089	0.509	13.76	186	72	76	28.845
MAXIMUM POWER IN SELECTED GEARS											
99.32	17589	2.12	2499	10.60	2nd (1LoDD) Gear			185	67	68	28.750
123.86	16603	2.80	2401	8.38	3rd (2LoTA) Gear			189	63	66	28.940
126.74	14079	3.38	2400	5.49	4th (2LoDD) Gear			189	63	65	28.940
127.67	11074	4.32	2399	3.65	5th (3LoTA) Gear			189	63	65	28.940
127.26	9362	5.10	2400	3.00	6th (3LoDD) Gear			189	62	64	28.940
127.33	9226	5.18	2402	2.83	7th (4LoTA) Gar			188	62	64	28.940
129.46	7981	6.08	2401	2.41	8th (4LoDD) Gear			189	66	71	28.920
130.94	7387	6.65	2401	2.33	9th (1HiTA) Gear			189	64	67	28.940
130.07	6249	7.81	2401	1.91	10th (1HiDD) Gear			189	64	68	28.940

LUGGING ABILITY IN RATED GEAR (8th 4LoDD)

Crankshaft Speed rpm	2401	2163	1921	1677	1438	1200
Pounds Pull	7981	9225	9727	10367	9675	8702
Increase in Pull %	0	16	22	30	21	9
Horsepower	129.46	134.12	125.34	116.28	93.29	70.28
Miles Per Hour	6.08	5.45	4.83	4.21	3.62	3.03
Slip of Drivers %	2.41	2.75	3.24	3.57	3.08	2.75

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power 2 Hours	78.5
75% of Pull at Max. Power 10 Hours	79.0
50% of Pull at Max. Power 2 Hours	78.5
50% of Pull at Reduced Engine Speed 2 Hours	76.0
Bystander in 15th (4HiTA) gear	88.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi	Two 18.4R38; 8; 16	Two 18.4R38; 8; 16
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	572 lb	None
Front Tires	—No., size, ply & psi	Two 18.4R38; 8; 16	Two 18.4R38; 8; 16
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	62 lb	None
Height of drawbar		20 in	20 in
Static weight with operator—rear		9080 lb	7935 lb
	front	9810 lb	9685 lb
	Total	18890 lb	17620 lb

Department of Agricultural Engineering

Dates of Test: August 22 to 29, 1979

Manufacturer: International Harvester Company, 401 North Michigan Avenue, Chicago, IL 60611

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8407 **Fuel weight** 7.000 lbs/gal **Oil** SAE 30 **API service classification** SC/SE-CA/CD **To motor** 3.938 gal **Drained from motor** 3.731 gal **Transmission and final drive lubricant** I.H. HyTran Fluid **Total time engine was operated** 36.5 hours.

ENGINE Make International Diesel **Type** 6 cylinder vertical with turbocharger **Serial No.** 467TT2U090407* **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 4.300" x 5.350" **Compression ratio** 16.3 to 1 **Displacement** 466 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** two paper cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type four wheel drive **Serial No.** 2890007U9649* **Tread width** rear 59.8" to 104" front 59.8" to 104" **Wheel base** 110" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 60.8" Vertical distance above roadway 41.5" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph** first 1.8 second 2.2 third 2.9 fourth 3.4 fifth 4.3 sixth 5.0 seventh 5.1 eighth 5.9 ninth 6.5 tenth 7.6 eleventh 10.1 twelfth 11.9 thirteenth 14.9 fourteenth 17.4 fifteenth 17.7 sixteenth 20.7 reverse 3.2, 3.7, 5.0, 5.8, 7.3, 8.6, 8.7, 10.2 **Clutch** single dry disc hydraulically operated by foot pedal **Brakes** multiple wet disc hydraulically operated by foot pedal **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 194.4" left 194.4"**Turning space diameter** (on concrete surface without brake) right 433.2" left 432.2" **Power take-off** 1000 rpm at 2071 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 164°F. Nine gears were chosen between 15% slip and 10 mph. The pull in 2nd (1LoDD) gear was limited to avoid tractor bouncing.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1320.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1321—MASSEY-FERGUSON 2675 DIESEL 8-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1196 rpm)								
100.84	2500	7.374	0.512	13.68	197	71	75	28.840
Standard Power Take-off Speed (1000 rpm)—One Hour								
95.00	2091	6.331	0.467	15.00	199	69	75	28.875
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
90.37	2636	6.613	0.512	13.67	193	68	75	......
0.00	2751	2.546	......	......	181	68	75	......
46.45	2700	4.440	0.669	10.46	185	68	75	......
102.23	2500	7.431	0.509	13.76	196	68	75	......
23.27	2724	3.300	0.993	7.05	184	68	75	......
68.69	2668	5.383	0.549	12.76	188	68	75	......
Av 55.17	**2663**	**4.952**	**0.628**	**11.14**	**188**	**68**	**75**	**28.910**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 4th Gear											
82.65	6127	5.06	2501	8.06	7.196	0.609	11.48	208	68	85	28.960
75% of Pull at Maximum Power—Ten Hours 4th Gear											
69.69	4745	5.51	2656	5.74	6.021	0.605	11.57	190	61	72	29.070
50% of Pull at Maximum Power—Two Hours 4th Gear											
49.15	3241	5.69	2694	4.02	4.911	0.699	10.01	185	63	71	28.980
50% of Pull at Reduced Engine Speed—Two Hours 6th Gear											
48.41	3198	5.68	1679	4.06	3.482	0.503	13.90	187	66	78	28.995
MAXIMUM POWER IN SELECTED GEARS											
65.01	10226	2.38	2648	14.81	2nd Gear			186	61	66	28.980
83.34	9244	3.38	2501	12.58	3rd Gear			193	61	66	28.980
85.44	6328	5.06	2499	7.81	4th Gear			204	67	79	28.990
86.18	5466	5.91	2498	6.96	5th Gear			204	68	83	28.980
85.02	3825	8.39	2500	4.67	6th Gear			201	68	83	28.970

LUGGING ABILITY IN RATED GEAR (4th)

Crankshaft Speed rpm	2499	2250	1996	1751	1490	1245
Pounds Pull	6328	6792	7238	7591	7589	7445
Increase in Pull %	0	7	14	20	20	18
Horsepower	85.44	81.95	76.87	70.17	59.65	48.95
Miles Per Hour	5.06	4.52	3.98	3.47	2.95	2.47
Slip of Drivers %	7.81	8.58	9.41	9.82	10.22	9.95

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power 2 Hours	79.0
75% of Pull at Max. Power 10 Hours	82.0
50% of Pull at Max. Power 2 Hours	82.5
50% of Pull at Reduced Engine Speed 2 Hours	79.0
Bystander in 8th gear	90.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi	Two 18.4-38; 10; 22	Two 18.4-38; 10; 22
Ballast	—Liquid (each)	965 lb	None
	Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi	Two 11.00-16; 6; 32	Two 11.00-16; 6; 32
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	None	None
Height of drawbar		21.5 in	21.5 in
Static weight with operator—rear		10500 lb	8570 lb
	front	3780 lb	3780 lb
	Total	14280 lb	12350 lb

Department of Agricultural Engineering

Dates of Test: August 31 to September 8, 1979

Manufacturer: Massey-Ferguson Inc., 1901 Bell Avenue, Des Moines, Iowa 50315

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8407 **Fuel weight** 7.000 lbs/gal **Oil SAE** 20-20W **API service classification** SB/SE-CA/CC **To motor** 4.195 gal **Drained from motor** 3.716 gal **Transmission and final drive lubricant** MF Permatran **Total time engine was operated** 31.5 hours.

ENGINE Make Perkins Diesel **Type** six cylinder vertical **Serial No.** TW31008N28496F **Crankshaft** lengthwise **Rated rpm** 2500 **Bore and stroke** 3.875" x 5.0" **Compression ratio** 16.0 to 1 **Displacement** 354 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** one paper cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: Type standard **Serial No.** 9R 002625 **Tread width** rear 65" to 95" front 60" to 80" **Wheel base** 105.4" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 34.4" Vertical distance above roadway 43.3" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** first 1.9 second 2.6 third 3.8 fourth 5.4 fifth 6.3 sixth 8.7 seventh 12.7 eighth 18.0 reverse 1.6, 2.2, 3.2, 4.6, 5.4, 7.4 **Clutch** single dry disc operated by foot pedal **Brakes** single wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 135" left 135" (on concrete surface without brake) right 180" left 180" **Turning space diameter** (on concrete surface with brake applied) right 294" left 294" (on concrete surface without brake) right 381" left 381" **Power take-off** 1000 rpm at 2091 engine rpm and 540 rpm at 1992 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump was 147°F. Five gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1321.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1322—MASSEY-FERGUSON 2705 DIESEL 8-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Air wet bulb	Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1196 rpm)								
121.11	2500	7.969	0.461	15.20	189	68	75	28.843
Standard Power Take-off Speed (1000 rpm)—One Hour								
114.44	2091	6.797	0.416	16.84	190	68	75	28.845
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
110.84	2689	8.019	0.506	13.82	189	68	75	......
0.00	2815	3.176	......	......	181	68	75	......
56.80	2756	5.623	0.693	10.10	185	68	76	......
121.88	2500	7.963	0.457	15.31	190	69	75	......
28.54	2786	4.329	1.062	6.59	182	69	75	......
84.07	2724	6.720	0.560	12.51	186	70	77	......
Av 67.02	2712	5.971	0.624	11.22	186	69	75	28.847

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Air wet bulb	Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours Gear											
98.51	6979	5.29	2500	7.14	7.857	0.558	12.54	193	83	89	28.815
75% of Pull at Maximum Power—Ten Hours 4th Gear											
83.29	5366	5.82	2695	5.23	7.371	0.619	11.30	189	75	89	28.771
50% of Pull at Maximum Power—Two Hours 4th Gear											
58.19	3620	6.03	2740	3.63	6.161	0.741	9.45	188	82	91	28.770
50% of Pull at Reduced Engine Speed—Two Hours 6th Gear											
58.30	3632	6.02	1714	3.79	4.304	0.517	13.55	184	68	69	28.970
MAXIMUM POWER IN SELECTED GEARS											
84.07	12588	2.50	2691	14.89	2nd Gear			187	70	74	28.800
97.98	10366	3.54	2499	11.71	3rd Gear			192	74	83	28.830
101.05	7155	5.30	2499	7.03	4th Gear			191	72	79	28.840
101.47	6162	6.17	2500	6.20	5th Gear			192	74	83	28.820
98.41	4229	8.73	2499	4.34	6th Gear			191	75	85	28.820

LUGGING ABILITY IN RATED GEAR (4th)

Crankshaft Speed rpm	2499	2253	1996	1744	1492	1247
Pounds Pull	7155	7760	8541	8813	8820	8496
Increase in Pull %	0	8	19	23	23	19
Horsepower	101.05	98.17	94.80	85.16	72.83	58.82
Miles Per Hour	5.30	4.74	4.16	3.62	3.10	2.60
Slip of Drivers %	7.03	7.62	8.50	8.93	9.07	8.64

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power 2 Hours	80.5
75% of Pull at Max. Power 10 Hours	80.0
50% of Pull at Max. Power 2 Hours	80.0
50% of Pull at Reduced Engine Speed 2 Hours	79.0
Bystander in 7th gear	89.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi	Two 20.8-38; 10; 32	Two 20.8-38; 10; 22
Ballast	—Liquid (each)	1148 lb	None
	Cast Iron (each)	1000 lb	None
Front Tires	—No., size, ply & psi	Two 11.00-16; 6; 32	Two 11.00-16; 6; 32
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	None	None
Height of drawbar		22.5 in	22.5 in
Static weight with operator—rear		12970 lb	8675 lb
front		3830 lb	3830 lb
Total		16800 lb	12505 lb

Department of Agricultural Engineering

Dates of Test: August 31 to September 6, 1979

Manufacturer: Massey-Ferguson, Inc., 1901 Bell Avenue, Des Moines, Iowa 50315

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8407 **Fuel weight** 7.000 lbs/gal **Oil SAE** 20-20W **API service classification** SB/SE-CA/CD **To motor** 4.199 gal **Drained from motor** 3.565 gal **Transmission and final drive lubricant** MF Permatran **Total time engine was operated** 33.0 hours.

ENGINE Make Perkins Diesel **Type** six cylinder vertical with turbocharger **Serial No.** TU31010N29596F **Crankshaft** lengthwise **Rated rpm** 2500 **Bore and stroke** 3.875" x 5.0" **Compression ratio** 16.0 to 1 **Displacement** 354 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** two full flow cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: Type standard **Serial No.** 9R 004209 **Tread width** rear 65" to 95" front 60" to 80" **Wheel base** 105.4" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 34.2" Vertical distance above roadway 43.3" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** first 2.0 second 2.7 third 3.9 fourth 5.6 fifth 6.5 sixth 9.0 seventh 13.1 eighth 18.7 reverse 1.7, 2.3, 3.3, 4.8, 5.5, 7.7 **Clutch** single dry disc operated by foot pedal **Brakes** single wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 135" left 135" (on concrete surface without brake) right 180" left 180" **Turning space diameter** (on concrete surface with brake applied) right 294" left 294" (on concrete surface without brake) right 381" left 381" **Power take-off** 1000 rpm at 2091 engine rpm and 540 rpm at 1992 engine rpm.

REPAIRS AND ADJUSTMENTS: The tube in the left rear tire was replaced at end of the 50% Drawbar Fuel Test.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump was 151°F. Five gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1322.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1323—JOHN DEERE 8440 DIESEL 16-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crankshaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—993 rpm)								
179.83	2100	11.340	0.443	15.86	169	66	75	28.887
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
157.13	2158	10.390	0.464	15.12	167	67	75	......
0.00	2311	3.462	......	......	154	66	73	......
81.17	2234	6.975	0.603	11.64	160	66	74	......
180.04	2101	11.343	0.442	15.87	171	67	75	......
41.43	2272	5.355	0.907	7.74	156	66	74	......
119.98	2196	8.655	0.506	13.86	164	66	74	......
Av 96.62	**2212**	**7.697**	**0.559**	**12.55**	**162**	**66**	**74**	**28.910**

DRAWBAR PERFORMANCE

Hp	Drawbar pull lbs	Speed miles per hr	Crankshaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cooling med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 6th (C-1) Gear											
160.58	10051	5.99	2100	3.04	11.237	0.491	14.29	157	66	29.030	
75% of Pull at Maximum Power—Ten Hours 6th (C-1) Gear											
127.31	7601	6.28	2185	2.35	9.745	0.537	13.06	156	60	29.176	
50% of Pull at Maximum Power—Two Hour 6th (C-1) Gear											
86.98	5070	6.43	2220	1.61	7.729	0.624	11.25	145	54	68	29.010
50% of Pull at Reduced Engine Speed—Two Hours 9th (B-3) Gear											
86.60	5048	6.43	1469	1.61	6.215	0.504	13.93	149	54	68	29.000
MAXIMUM POWER IN SELECTED GEARS											
138.33	25383	2.04	2146	14.65	1st (A-1) Gear			159	45	48	29.140
150.68	21080	2.68	2102	8.59	2nd (A-2) Gear			155	53	62	29.040
160.17	14892	4.03	2100	4.67	3rd (A-3) Gear			153	52	58	29.040
163.26	12314	4.97	2098	3.78	4th (B-1) Gear			153	51	57	29.030
156.14	11486	5.10	2100	3.62	5th (A-4) Gear			152	51	56	29.030
161.90	10131	5.99	2100	2.96	6th (C-1) Gear			149	50	53	29.020
159.31	9535	6.27	2100	2.87	7th (B-2) Gear			153	52	59	29.040
159.42	7938	7.53	2100	2.29	8th (C-2) Gear			154	52	60	29.040
159.09	6513	9.16	2099	1.95	9th (B-3) Gear			153	53	61	29.040

LUGGING ABILITY IN RATED GEAR (6th C-1)

Crankshaft Speed rpm	2100	1882	1683	1472	1256	1046
Pounds Pull	10131	11505	12125	12990	13651	12077
Increase in Pull %	0	14	20	28	35	19
Horsepower	161.90	164.02	154.31	144.18	128.82	95.48
Miles Per Hour	5.99	5.35	4.77	4.16	3.54	2.96
Slip of Drivers %	2.96	3.45	3.62	3.94	4.27	3.78

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power 2 Hours	79.0
75% of Pull at Max. Power 10 Hours	79.0
50% of Pull at Max. Power 2 Hours	78.0
50% of Pull at Reduced Engine Speed 2 Hours	76.0
Bystander in 15th (D-3) gear	88.0

TIRES, BALLAST AND WEIGHT		**Without Ballast**
Rear Tires	—No., size, ply & psi	Four 20.8-38; 8; 12
Ballast	—Liquid (each)	None
	—Cast Iron (each)	None
Front Tires	—No., size, ply & psi	Four 20.8-38; 8; 12
Ballast	—Liquid (each)	None
	—Cast Iron (each)	None
Height of drawbar		16.5 in.
Static weight with operator	—rear	12770 lb
	front	23820 lb
	total	26590 lb

Department of Agricultural Engineering

Dates of Test: September 10-15, 1979

Manufacturer: John Deere Waterloo Tractor Works, P.O. Box 270, Waterloo, Iowa 50704

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8430 **Fuel weight** 7.019 lbs/gal **Oil** SAE 30 API **service classification** SD-CC/CD **To motor** 4.802 gal **Drained from motor** 4.352 gal **Transmission and final drive lubricant** John Deere Hy-Gard **Total time engine was operated** 34.0 hours.

ENGINE **Make** John Deere Diesel **Type** six cylinder vertical with turbocharger and intercooler **Serial No.** 6466AR-01083158RG **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.5625" x 4.75" **Compression ratio** 15.5 to 1 **Displacement** 466 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** one paper cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: **Type** Four wheel drive with duals **Serial No.** 8440H-001637R **Tread width** rear 63" to 130" front 63" to 130" **Wheel base** 125" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 65.0" Vertical distance above roadway 40.5" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph** first 2.2 second 2.8 third 3.9 fourth 4.9 fifth 5.1 sixth 5.7 seventh 6.3 eighth 7.4 ninth 8.8 tenth 9.3 eleventh 10.3 twelfth 11.4 thirteenth 12.0 fourteenth 13.4 fifteenth 16.7 sixteenth 21.7 reverse 4.1, 5.3, 9.2, 10.7, 11.9, 14.0 **Clutch** multiple wet disc hydraulically operated by foot pedal **Brakes** single wet disc hydraulically operated by foot pedal **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 248" left 248" **Turning space diameter** (on concrete surface without brake) right 516" left 516" **Power take-off** 993 rpm at 2100 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 153°F. Nine gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1323.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1324—JOHN DEERE 8640 DIESEL 16-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—993 rpm)								
228.75	2100	14.657	0.450	15.61	189	59	75	29.053
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
199.53	2156	13.421	0.472	14.87	187	59	75	......
0.00	2290	4.424	......	......	176	59	75	......
102.85	2224	9.027	0.616	11.39	181	59	76	......
232.88	2100	14.840	0.447	15.69	190	59	75	......
52.56	2255	6.727	0.904	7.77	178	58	75	......
152.19	2192	11.211	0.517	13.58	184	58	76	......
Av 123.29	**2203**	**9.942**	**0.566**	**12.40**	**183**	**59**	**75**	**29.033**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 6th (C-1) Gear											
203.34	13670	5.58	2099	3.35	14.461	0.499	14.06	187	58	77	29.100
75% of Pull at Maximum Power—Ten Hours 6th (C-1) Gear											
163.04	10515	5.81	2168	2.40	12.406	0.534	13.14	184	59	77	28.966
50% of Pull at Maximum Power—Two Hours 6th (C-1) Gear											
111.08	6990	5.96	2207	1.71	9.955	0.629	11.16	181	56	66	29.100
50% of Pull at Reduced Engine Speed—Two Hours 9th (B-3) Gear											
111.48	7002	5.97	1462	1.63	7.943	0.500	14.04	182	59	76	29.125
MAXIMUM POWER IN SELECTED GEARS											
175.50	27782	2.37	2140	14.82	2nd (A-2) Gear			183	53	59	29.090
201.17	20191	3.74	2100	5.29	3rd (A-3) Gear			186	57	72	29.120
208.38	16887	4.63	2100	4.11	4th (B-1) Gear			186	55	67	29.120
200.31	15836	4.74	2100	3.79	5th (A-4) Gear			186	55	66	29.120
208.21	13998	5.58	2099	3.15	6th (C-1) Gear			186	54	64	29.130
205.39	13190	5.84	2100	2.99	7th (B-2) Gear			187	56	68	29.120
205.21	10960	7.02	2100	2.42	8th (C-2) Gear			186	56	69	29.120
205.03	9002	8.54	2098	2.09	9th (B-3) Gear			186	57	70	29.120

LUGGING ABILITY IN RATED GEAR (6th C-1)

Crankshaft Speed rpm	2099	1885	1676	1471	1259	1044
Pounds Pull	13998	16311	17660	17296	17233	15116
Increase in Pull %	0	17	26	28	23	8
Horsepower	208.21	216.51	207.56	184.69	152.27	111.37
Miles Per Hour	5.58	4.98	4.41	3.86	3.31	2.76
Slip of Drivers %	3.15	3.71	4.19	4.51	4.19	3.71

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power 2 Hours	81.0
75% of Pull at Max. Power 10 Hours	80.0
50% of Pull at Max. Power 2 Hours	80.5
50% of Pull at Reduced Engine Speed 2 Hours	76.0
Bystander in 15th (D-3) gear	90.0

TIRES, BALLAST AND WEIGHT		**Without Ballast**
Rear Tires	—No., size, ply & psi	Four 23.1-34; 8; 12
Ballast	—Liquid (each)	None
	—Cast Iron (each)	None
Front Tires	—No., size, ply & psi	Four 23.1-34; 8; 12
Ballast	—Liquid (each)	None
	—Cast Iron (each)	None
Height of drawbar	16 in	
Static weight with operator	—rear	13610 lb
	front	14660 lb
	total	28270 lb

Department of Agricultural Engineering

Dates of Test: September 11-18, 1979

Manufacturer: John Deere Waterloo Tractor Works,
P.O. Box 270, Waterloo, Iowa 50704

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8430 **Fuel weight** 7.019 lbs/gal **Oil** SAE 30 API **service classification** SD-CC/CD **To motor** 5.581 gal **Drained from motor** 5.043 gal **Transmission and final drive lubricant** John Deere Hy-Gard **Total time engine was operated** 33.0 hours.

ENGINE **Make** John Deere Diesel **Type** six cylinder vertical with turbocharger and intercooler **Serial No.** 6619AR-08 032071RG **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 5.125" x 5.00" **Compression ratio** 15.2 to 1 **Displacement** 619 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** one paper cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** three thermostats.

CHASSIS: **Type** Four wheel drive with duals **Serial No.** 8640H-002277R **Tread width** rear 63" to 130" front 63" to 130" **Wheel base** 125" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 65.2" Vertical distance above roadway 40.6" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph** first 2.1 second 2.6 third 3.8 fourth 4.6 fifth 4.7 sixth 5.5 seventh 5.8 eighth 6.9 ninth 8.4 tenth 9.0 eleventh 10.0 twelfth 10.4 thirteenth 11.2 fourteenth 12.5 fifteenth 16.2 sixteenth 20.2 reverse 4.1, 5.1, 9.1, 10.8, 11.3, 13.5 **Clutch** multiple wet disc hydraulically operated by foot pedal **Brakes** single wet disc hydraulically operated by foot pedal **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 240" left 240" **Turning space diameter** (on concrete surface without brake) right 504" left 504" **Power take-off** 993 rpm at 2100 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 157°F. Eight gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1324.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1325—FORD 1700 DIESEL 12-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—551 rpm)								
23.26	2500	1.780	0.537	13.07	216	61	75	29.167
Standard Power Take-off Speed (540 rpm)—One Hour								
23.02	2452	1.768	0.539	13.02	217	61	75	29.180
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
20.36	2576	1.475	0.508	13.80	202	62	75	.....
0.00	2698	0.521	.....	.....	170	63	75	.....
10.46	2642	0.966	0.648	10.83	176	63	75	.....
23.00	2500	1.791	0.546	12.84	212	63	75	.....
5.27	2668	0.731	0.974	7.21	174	64	76	.....
15.49	2610	1.171	0.531	13.22	184	64	78	.....
Av 12.43	2616	1.109	0.626	11.21	186	63	76	29.187

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 8th (3-2) Gear											
18.82	16.46	4.29	2499	8.19	1.727	0.644	10.89	213	61	80	29.035
75% of Pull at Maximum Power—Ten Hours 8th (3-2) Gear											
15.62	1296	4.52	2578	6.22	1.361	0.612	11.48	193	65	81	28.758
50% of Pull at Maximum Power—Two Hours 8th (3-2) Gear											
10.76	862	4.68	2619	4.37	1.033	0.674	10.41	181	64	85	28.970
50% of Pull at Reduced Engine Speed—Two Hours 10th (4-1) Gear											
10.80	865	4.68	1714	4.15	0.855	0.556	12.63	191	66	85	28.910
MAXIMUM POWER IN SELECTED GEARS											
17.52	2801	2.35	2558	14.89	6th (2-3) Gear			177	54	56	28.810
19.21	2317	3.11	2501	11.83	7th (3-1) Gear			208	56	72	29.060
19.72	1726	4.29	2498	8.26	8th (3-2) Gear			199	54	65	29.060
20.21	1368	5.54	2501	6.43	9th (3-3) Gear			207	56	73	29.050
20.10	1118	6.74	2499	5.31	10th (4-1) Gear			206	56	75	29.050
19.30	797	9.08	2497	3.81	11th (4-2) Gear			203	58	76	29.050

LUGGING ABILITY IN RATED GEAR (8th 3-2)						
Crankshaft Speed rpm	2498	2254	1997	1750	1494	1251
Pounds Pull	1726	1791	1872	1830	1794	1722
Increase in Pull %	0	4	8	6	4	0
Horsepower	19.72	18.39	16.96	14.57	12.21	9.86
Miles Per Hour	4.29	3.85	3.40	2.99	2.55	2.15
Slip of Drivers %	8.26	8.62	8.97	8.70	8.53	8.17

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power 2 Hours	95.5
75% of Pull at Max. Power 10 Hours	93.5
50% of Pull at Max. Power 2 Hours	93.0
50% of Pull at Reduced Engine Speed 2 Hours	87.5
Bystander in 12th (4-3) gear	81.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi	Two 11.2-24; 4; 14	Two 11.2-24; 4; 14
Ballast	—Liquid (each)	265 lb	None
	Cast Iron (each)	130 lb	None
Front Tires	—No., size, ply & psi	Two 5.00-15; 4; 40	Two 5.00-15; 4; 40
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	160 lb	None
Height of drawbar		15.5 in	15.5 in
Static weight with operator—rear		2495 lb	1705 lb
	front	1230 lb	910 lb
	Total	3725 lb	2615 lb

Department of Agricultural Engineering

Dates of Test: September 24-28, 1979

Manufacturer: Ishikawajima-Shibaura Machinery Co., Ltd., Tokyo, Japan

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8430 **Fuel weight** 7.019 lbs/gal **Oil** SAE 30 API service **classification** SB/SE-CA/CD **To motor** 1.179 gal **Drained from motor** 1.028 gal **Transmission and final drive lubricant** Ford M2C 134A fluid **Total time engine was operated** 33.5 hours.

ENGINE **Make** Shibaura Diesel **Type** two cylinder vertical **Serial No.** LE 892-36329 **Crankshaft** lengthwise **Rated rpm** 2500 **Bore and stroke** 3.54" x 3.94" **Compression ratio** 21 to 1 **Displacement** 77.6 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** oil bath steel wool **Oil filter** one paper cartridge **Fuel filter** one paper cartridge **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** Standard **Serial No.** U-701696 **Tread width** rear 43.3" to 58.7" front 43.5" to 57.5" **Wheel base** 60.2" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 23.4" Vertical distance above roadway 28.9" Horizontal distance from center of rear wheel tread 0.1" to the right **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** first 0.7 second 0.9 third 1.2 fourth 1.6 fifth 2.2 sixth 2.8 seventh 3.6 eighth 4.8 ninth 6.1 tenth 7.3 eleventh 9.7 twelfth 12.3 reverse 0.8, 1.9, 4.2, 8.6 **Clutch** single dry disc operated by foot pedal **Brakes** expanding shoe operated by two foot pedals which can be locked together **Steering** mechanical **Turning radius** (on concrete surface with brake applied) right 90.6" left 90.6" (on concrete surface without brake) right 98.4" left 98.4" **Turning space diameter** (on concrete surface with brake applied) right 189" left 189" (on concrete surface without brake) right 204.8" left 204.8" **Power take-off** 540 rpm at 2452 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump was 165°F. Six gears were chosen between 15% slip and 10 mph. During the final inspection both cylinder walls were found to be scratched.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1325.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1326—FORD 1900 DIESEL 12-SPEED

POWER TAKE-OFF PERFORMANCE

	Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION									
Rated Engine Speed—Two Hours (PTO Speed—616 rpm)									
	26.88	2800	2.162	0.565	12.43	218	59	75	29.100
Standard Power Take-off Speed (540 rpm)—One Hour									
	25.68	2452	2.042	0.558	12.58	223	58	75	29.090
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
	23.65	2898	1.868	0.554	12.66	206	58	74	......
	0.00	2960	0.684	......	......	171	59	75	......
	11.96	2932	1.197	0.702	10.00	176	59	76	......
	27.21	2798	2.184	0.563	12.46	214	59	75	......
	6.00	2944	0.919	1.074	6.53	174	60	76	......
	17.88	2921	1.504	0.591	11.88	188	60	77	......
Av	14.45	2909	1.393	0.676	10.38	188	59	76	29.083

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 8th (3-2) Gear											
22.06	1703	4.86	2800	7.26	2.119	0.674	10.41	207	61	75	28.850
75% of Pull at Maximum Power—Ten Hours 8th (3-2) Gear											
18.27	1336	5.13	2890	5.19	1.678	0.645	10.89	190	62	78	28.901
50% of Pull at Maximum Power—Two Hours 8th (3-2) Gear											
12.29	880	5.24	2910	3.79	1.318	0.753	9.32	177	63	79	28.825
50% of Pull at Reduced Engine Speed—Two Hours 10th (4-1) Gear											
12.20	873	5.24	1969	3.63	1.069	0.615	11.41	178	62	78	28.840
MAXIMUM POWER IN SELECTED GEARS											
20.33	2964	2.57	2866	14.87	6th (2-3) Gear			184	52	64	28.920
22.35	2432	3.45	2801	10.88	7th (3-1) Gear			200	60	70	28.840
23.00	1773	4.86	2800	7.21	8th (3-2) Gear			196	58	66	28.820
23.49	1421	6.20	2800	5.59	9th (3-3) Gear			200	60	70	28.840
23.47	1194	7.37	2800	4.53	10th (4-1) Gear			200	60	71	28.840

LUGGING ABILITY IN RATED GEAR (8th 3-2)

Crankshaft Speed rpm	2800	2518	2248	1948	1681	1395
Pounds Pull	1773	1939	2014	2012	2009	2000
Increase in Pull %	0	9	14	13	13	13
Horsepower	23.00	22.42	20.68	17.90	15.43	12.76
Miles Per Hour	4.86	4.34	3.85	3.34	2.88	2.39
Slip of Drivers %	7.21	8.03	8.40	8.50	8.40	8.31

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power 2 Hours	94.5
75% of Pull at Max. Power 10 Hours	92.5
50% of Pull at Max. Power 2 Hours	92.5
50% of Pull at Reduced Engine Speed 2 Hours	87.5
Bystander in 12th (4-3) gear	82.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi	Two 12.4-24; 4; 14	Two 12.4-24; 4; 14
Ballast	—Liquid (each)	323 lb	None
	Cast Iron (each)	130 lb	None
Front Tires	—No., size, ply & psi	Two 5.00-15; 4; 40	Two 5.00-15; 4; 40
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	160 lb	None
Height of drawbar		17 in	17 in
Static weight with operator—rear		2680 lb	1775 lb
	front	1480 lb	1160 lb
	Total	4160 lb	2935 lb

Department of Agricultural Engineering

Dates of Test: September 24 to October 1, 1979

Manufacturer: Ishikawajima-Shibaura Machinery Company, Ltd., Tokyo, Japan

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8430 **Fuel weight** 7.019 lbs/gal **Oil** SAE 30 API **service classification** SC/SE-CA/CD **To motor** 1.782 gal **Drained from motor** 1.620 gal **Transmission and final drive lubricant** Ford M2C134A fluid **Total time engine was operated** 33.0 hours.

ENGINE **Make** Shibaura Diesel **Type** three cylinder vertical **Serial No.** LEM853-15539 **Crankshaft** lengthwise **Rated rpm** 2800 **Bore and stroke** 3.35" x 3.31" **Compression ratio** 21 to 1 **Displacement** 87.2 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** oil bath steel wool **Oil filter** one paper cartridge **Fuel filter** one paper cartridge **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** Standard **Serial No.** U-901206 **Tread width** rear 45.7" to 61.0" front 43.5" to 57.5" **Wheel base** 63.0" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 27.1" Vertical distance above roadway 27.9" Horizontal distance from center of rear wheel tread 0.2" to the right **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** first 0.8 second 1.0 third 1.3 fourth 1.8 fifth 2.4 sixth 3.0 seventh 4.0 eighth 5.4 ninth 6.7 tenth 7.9 eleventh 10.7 twelfth 13.4 reverse 0.9, 2.1, 4.6, 9.2 **Clutch** single dry disc operated by foot pedal **Brakes** expanding shoe operated by two foot pedals which can be locked together **Steering** mechanical **Turning radius** (on concrete surface with brake applied) right 94.5" left 94.5" (on concrete surface without brake) right 102.4" left 102.4" **Turning space diameter** (on concrete surface with brake applied) right 196.8" left 196.8" (on concrete surface without brake) right 220.4" left 220.4" **Power take-off** 540 rpm at 2452 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 181°F. Five gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1326.

LOUIS I. LEVITICUS
Engineer-in-Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1327—JOHN DEERE 1050 DIESEL
8-SPEED

POWER TAKE-OFF PERFORMANCE

	Hp	Crankshaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer Inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION									
Rated Engine Speed—Two Hours (PTO Speed—574 rpm)									
	33.41	2400	2.206	0.464	15.14	211	52	75	29.203
Standard Power Take-off Speed (540 rpm)—One Hour									
	33.42	2258	2.161	0.454	15.46	216	52	75	29.180
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
	29.43	2488	2.005	0.478	14.68	205	52	76	......
	0.00	2584	0.645	......	......	166	52	76	......
	15.0	2550	1.282	0.597	11.77	177	52	76	......
	33.2	2400	2.223	0.469	14.98	211	52	76	......
	7.0	2569	0.936	0.865	8.12	169	52	75	......
	22.3	2516	1.628	0.512	13.72	188	52	75	......
Av	17.9	2518	1.453	0.568	12.36	186	53	75	29.167

DRAWBAR PERFORMANCE
(Front Wheel Drive Disengaged)

Hp	Drawbar pull lbs	Speed miles per hr	Crankshaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cooling med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 6th Gear											
27.25	1938	5.27	2398	6.40	2.208	0.569	12.34	208	51	68	28.565
75% of Pull at Maximum Power—Ten Hours 6th Gear											
22.46	1498	5.62	2504	4.51	1.873	0.586	11.99	107	57	71	28.568
50% of Pull at Maximum Power—Two Hours 6th Gear											
15.33	997	5.77	2538	3.27	1.514	0.693	10.13	169	45	52	28.820
50% of Pull at Reduced Engine Speed—Two Hours 7th Gear											
15.39	999	5.78	1717	3.48	1.247	0.569	12.35	169	43	51	28.870
MAXIMUM POWER IN SELECTED GEARS											
21.50	3466	2.33	2506	14.96	4th Gear			173	43	49	28.790
27.40	2906	3.54	2400	10.56	5th Gear			205	49	64	28.630
28.15	2002	5.27	2401	6.51	6th Gear			205	47	61	28.690
27.76	1302	7.99	2401	4.14	7th Gear			205	49	65	28.600

LUGGING ABILITY IN RATED GEAR (6th)

Crankshaft Speed rpm	2401	2154	1919	1678	1428	1200
Pounds Pull	2002	2296	2487	2510	2384	2215
Increase in Pull %	0	15	24	25	19	11
Horsepower	28.15	28.60	27.37	24.13	19.60	15.43
Miles Per Hour	52.7	4.67	4.13	3.61	3.08	2.61
Slip of Drivers %	6.51	7.81	8.45	8.66	8.03	7.49

TRACTOR SOUND LEVEL WITHOUT CAB

	dB(A)	(Front Wheel Drive Disengaged) dB(A)
Maximum Available Power 2 Hours	90.0	89.0
75% of Pull at Max. Power 10 Hours	.....	89.5
50% of Pull at Max. Power 2 Hours	.....	89.0
50% of Pull at Reduced Engine Speed 2 Hours	.....	86.5
Bystander in 8th gear	.....	79.5

Department of Agricultural Engineering

Dates of Test: October 8-12, 1979

Manufacturer: Yanmar Diesel Co. Ltd., Osaka, Japan

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8430 **Fuel weight** 7.019 lbs/gal **Oil SAE** 30 **API service classification** SD-CC/CD **To motor** 1.551 gal **Drained from motor** 1.490 gal **Transmission and final drive lubricant** John Deere Hy Gard **Total time engine was operated** 37.0 hours.

ENGINE Make Yanmar Diesel **Type** three cylinder vertical with turbocharger **Serial No.** 3T90TJ80156 **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 3.54" x 3.54" **Compression ratio** 20.4 to 1 **Displacement** 105 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one paper cartridge **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type Four wheel drive **Serial No.** 1050S-001772 **Tread width** rear 51" to 75" front 49" **Wheel base** 69" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 28.9" Vertical distance above roadway 28.4" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** first 0.9 second 1.2 third 1.8 fourth 2.7 fifth 4.0 sixth 5.7 seventh 8.5 eighth 12.5 reverse 1.2, 5.7 **Clutch** single dry disc operated by foot pedal **Brakes** internal expanding shoe operated by two foot pedals which can be locked together **Steering** mechanical **Turning radius** (on concrete surface with brake applied) right 100.4" left 100.4" (on concrete surface without brake) right 108.3" left 108.7" **Turning space diameter** (on concrete surface with brake applied) right 207.8" left 207.8" (on concrete surface without brake) right 223.6" left 224.4" **Power take-off** 540 rpm at 2258 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 135°F. Four gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1327.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

continued on next page

NEBRASKA TRACTOR TEST 1327—JOHN DEERE 1050 DIESEL 8-SPEED

continued from previous page

DRAWBAR PERFORMANCE

(Front Wheel Drive Engaged)

					Fuel Consumption			Temp Degrees F			
Hp	Drawbar pull lbs	Speed miles per hr	Crankshaft speed rpm	Slip of drivers %	Gal per hr	Lb per hp-hr	Hp-hr per gal	Cooling med	Air wet bulb	Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 6th Gear											
27.31	1887	5.43	2401	4.76	2.173	0.558	12.57	208	52	69	28.495
MAXIMUM POWER IN SELECTED GEARS											
25.03	4033	2.33	2475	14.77	4th Gear			184	43	49	28.790
28.49	1973	5.42	2400	4.99	6th Gear			206	49	64	28.660

TIRES, BALLAST AND WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi	Two 13.6-28; 4; 14	Two 13.6-28; 4; 14
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	315 lb	None
Front Tires	—No., size, ply & psi	Two 7-16; 4; 22	Two 7-16; 4; 22
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	50 lb	None
Height of drawbar		16 in	16 in
Static weight with operator—rear		2680 lb	2050 lb
	front	1460 lb	1360 lb
	Total	4140 lb	3410 lb

NEBRASKA TRACTOR TEST 1328—CASE 4490 DIESEL 12-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1000 rpm)								
175.20	2200	11.471	0.460	15.27	196	63	75	28.920
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
154.24	2281	10.552	0.481	14.62	[illegible]	62	74	......
0.00	2397	3.354	......	......	179	62	75	......
79.74	2355	6.857	0.605	11.63	186	62	75	......
176.55	2200	11.516	0.459	15.33	196	62	76	......
40.00	2370	5.069	0.891	7.89	181	60	75	......
117.75	2320	8.640	0.516	13.63	190	60	74	......
Av 94.71	**2321**	**7.665**	**0.569**	**12.36**	**187**	**61**	**75**	**28.967**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 8th (3I) Gear											
150.14	9977	5.64	2199	4.07	11.289	0.529	13.30	195	57	71	28.980
75% of Pull at Maximum Power—Ten Hours 8th (3I) Gear											
121.71	7639	5.97	2298	2.78	9.721	0.562	12.52	190	61	66	28.747
50% of Pull at Maximum Power—Two Hours 8th (3I) Gear											
83.52	5096	6.15	2341	1.82	7.680	0.647	10.87	184	54	57	28.580
50% of Pull at Reduced Engine Speed—Two Hours 9th (3H) Gear											
83.44	5091	6.15	1871	1.74	6.507	0.548	12.82	185	60	65	28.500
MAXIMUM POWER IN SELECTED GEARS											
136.59	21400	2.39	2260	14.83	2nd (1I) Gear			189	48	49	28.600
142.15	19195	2.78	2200	11.34	3rd (2L) Gear			191	56	70	28.990
144.01	17396	3.10	2199	9.28	4th (1H) Gear			192	56	70	28.990
151.05	14548	3.89	2198	6.71	5th (2I) Gear			194	55	67	29.010
151.31	13700	4.14	2200	6.16	6th (3L) Gear			194	55	66	29.020
151.19	11387	4.98	2201	4.51	7th (2H) Gear			193	54	65	29.030
153.30	10180	5.65	2202	4.00	8th (3I) Gear			193	52	62	29.050
152.80	8029	7.14	2200	2.88	9th (3H) Gear			194	55	68	29.000
150.02	5872	9.58	2201	2.05	10th (4L) Gear			194	56	69	29.000

LUGGING ABILITY IN RATED GEAR (8th 3I)

Crankshaft Speed rpm	2202	1976	1765	1544	1310	1101
Pounds Pull	10180	10978	11312	11222	10570	9554
Increase in Pull %	0	8	11	10	4	-6
Horsepower	153.30	147.70	135.63	117.74	94.43	72.13
Miles Per Hour	5.65	5.05	4.50	3.93	3.35	2.83
Slip of Drivers %	4.00	4.51	4.80	4.66	4.22	3.92

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power 2 Hours	77.5
75% of Pull at Max. Power 10 Hours	77.5
50% of Pull at Max. Power 2 Hours	77.5
50% of Pull at Reduced Engine Speed 2 Hours	77.5
Bystander in 12th (4H) gear	84.0

TIRES, BALLAST AND WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi	Four 18.4-34; 6; 16	Four 18.4-34; 6; 16
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi	Four 18.4-34; 6; 16	Four 18.4-34; 6; 16
Ballast	—Liquid (each inner)	355 lb	None
	Cast Iron (front end total)	900 lb	None
Height of drawbar		16.5 in	16.5 in
Static weight with operator	—rear	9260 lb	9260 lb
	front	13190 lb	11580 lb
	Total	22450 lb	20840 lb

Department of Agricultural Engineering

Dates of Test: October 15-20, 1979

Manufacturer: J I Case Company, 700 State Street, Racine, Wisconsin 53404

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8444 **Fuel weight** 7.031 lbs/gal **Oil SAE** 30 **API service classification** SE-CD **To motor** 5.781 gal **Drained from motor** 5.422 gal **Transmission and hydraulic lubricant** Case TFD fluid **Final drive lubricant** Case FDL fluid **Total time engine was operated** 35 hours.

ENGINE **Make** Case Diesel **Type** six cylinder vertical with turbocharger **Serial No.** 10175566 **Crankshaft** lengthwise **Rated rpm** 2200 **Bore and stroke** 4.625" x 5.0" **Compression ratio** 15.8 to 1 **Displacement** 504 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** two paper cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two disposable cartridges **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: **Type** Four-wheel drive with duals **Serial No.** 8854458 **Tread width** rear 74" to 123" front 74" to 123" **Wheel base** 102" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 55.0" Vertical distance above roadway 41.2" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (3) range operator controlled powershift **Advertised speeds mph** first 2.0 second 2.7 third 3.0 fourth 3.3 fifth 4.1 sixth 4.3 seventh 5.1 eighth 5.7 ninth 7.2 tenth 9.5 eleventh 12.7 twelfth 17.5 reverse 3.3, 5.1, 7.2, 17.5 **Clutch** multiple wet disc hydraulically operated by foot pedal **Brakes** multiple dry disc hydraulically operated by foot pedal **Steering** hydrostatic for front wheels, electro hydraulic for rear wheels, front and rear wheels may be steered independently or together **Turning radius** (on concrete surface front-wheel steering) with duals, right 308" left 308" with singles, right 284" left 284" (on concrete surface with four-wheel steering) with duals, right 202" left 202" with singles, right 174" left 174" **Turning space diameter** (on concrete surface with front-wheel steering) with duals, right 640" left 640" with singles, right 597" left 597" (on concrete surface with four-wheel steering) with duals, right 430" left 430" with singles, right 382" left 382" **Power take-off** 1000 rpm at 2200 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 187°F. Nine gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1328.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1329—CASE 4690 DIESEL 12-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crankshaft speed rpm	Fuel Consumption		Hp-hr per gal	Temperature Degrees F			Barometer inches of Mercury
		Gal per hr	Lb per hp-hr		Cooling medium	Air wet bulb	Air dry bulb	
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1000 rpm)								
219.62	2200	14.393	0.461	15.26	204	56	75	28.847
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
192.64	2271	13.078	0.477	14.73	197	56	76	......
0.00	2389	3.682	......	......	176	55	74	......
99.35	2344	8.179	0.579	12.15	186	55	75	......
222.38	2200	14.473	0.458	15.37	200	56	76	......
50.35	2374	5.948	0.831	8.47	182	55	74	......
147.56	2320	10.462	0.499	14.10	190	56	76	......
Av 118.71	**2316**	**9.304**	**0.551**	**12.76**	**188**	**55**	**75**	**29.903**

DRAWBAR PERFORMANCE

Hp	Drawbar pull lbs	Speed miles per hr	Crankshaft speed rpm	Slip of drivers %	Fuel Consumption		Hp-hr per gal	Temp Degrees F			Barometer inches of Mercury
					Gal per hr	Lb per hp-hr		Cooling med	Air wet bulb	Air dry bulb	
Maximum Available Power—Two Hours 8th (3I) Gear											
189.75	11925	5.97	2199	3.98	14.169	0.525	13.39	193	43	53	29.010
75% of Pull at Maximum Power—Ten Hours 8th (3I) Gear											
154.65	9226	6.29	2291	2.87	12.047	0.548	12.84	188	47	55	28.962
50% of Pull at Maximum Power—Two Hours 8th (3I) Gear											
106.98	6195	6.48	2340	1.95	9.547	0.627	11.21	180	44	46	29.030
50% of Pull at Reduced Engine Speed—Two Hours 9th (3H) Gear											
106.97	6192	6.48	1871	1.87	8.331	0.541	13.00	179	30	57	29.025
MAXIMUM POWER IN SELECTED GEARS											
166.25	24564	2.54	2265	14.77	2nd (1I) Gear			176	40	41	29.000
182.35	23207	2.95	2201	10.93	3rd (2L) Gear			187	40	41	29.000
187.55	21323	3.30	2200	8.67	4th (1H) Gear			191	42	50	29.040
192.40	17439	4.14	2199	6.36	5th (2I) Gear			192	41	49	29.050
192.81	16449	4.40	2199	5.62	6th (3L) Gear			192	41	49	29.050
194.96	13883	5.27	2200	4.56	7th (2H) Gear			193	40	48	29.050
195.60	12292	5.97	2200	3.86	8th (3I) Gear			191	40	47	29.060
193.71	9638	7.54	2201	2.99	9th (3H) Gear			192	43	52	29.030

LUGGING ABILITY IN RATED GEAR (3I)

Crankshaft Speed rpm	2200	1983	1759	1538	1316	1093
Pounds Pull	12292	13097	13639	13658	12963	11428
Increase in Pull %	0	7	11	11	5	-7
Horsepower	195.60	187.30	172.60	151.05	123.01	90.61
Miles Per Hour	5.97	5.36	4.75	4.15	3.56	2.97
Slip of Drivers %	3.86	4.17	4.48	4.48	4.17	3.70

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power 2 Hours	78.0
75% of Pull at Max. Power 10 Hours	78.0
50% of Pull at Max. Power 2 Hours	77.5
50% of Pull at Reduced Engine Speed 2 Hours	76.0
Bystander in 12th (4H) gear	86.0

TIRES, BALLAST AND WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi	Four 20.8-34; 8; 16	Four 20.8-34; 8; 16
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi	Four 20.8-34; 8; 16	Four 20.8-34; 8; 16
Ballast	—Liquid (each inner)	1010 lb	None
	Cast Iron (front end total)	900 lb	None
Height of drawbar		18.5 in	18.5 in
Static weight with operator—rear		9860 lb	9860 lb
	front	15370 lb	12450 lb
	Total	25230 lb	22310 lb

Department of Agricultural Engineering

Dates of Test: October 18-26, 1979

Manufacturer: I I Case Company, 700 State Street, Racine, Wisconsin 53404

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8444 **Fuel weight** 7.031 lbs/gal **Oil** SAE 30 API service classification SE-CD **To motor** 5.640 gal **Drained' from motor** 5.362 gal **Transmission hand hydraulic lubricant** Case TFD fluid **Final drive lubricant** Case FDL fluid **Total time engine was operated** 34.5 hours.

ENGINE Make Case Diesel **Type** six cylinder vertical with turbocharger and intercooler **Serial No.** 10178781 **Crankshaft** lengthwise **Rated rpm** 2200 **Bore and stroke** 4.625" x 5.0" **Compression ratio** 15.8 to 1 **Displacement** 504 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** two paper cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two disposable cartridges **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: Type Four-wheel drive with duals **Serial No.** 8854444 **Tread width** rear 76" to 139" front 76" to 139" **Wheel base** 102" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 55.7" Vertical distance above roadway 45.5" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (3) range operator controlled powershift **Advertised speeds mph** first 2.0 second 2.7 third 3.1 fourth 3.4 fifth 4.2 sixth 4.4 seventh 5.2 eighth 5.9 ninth 7.4 tenth 9.9 eleventh 13.3 twelfth 18.2 reverse 3.4, 5.2, 7.4, 18.2 **Clutch** multiple wet disc hydraulically operated by foot pedal **Brakes** multiple dry disc hydraulically operated by foot pedal **Steering** hydrostatic for front wheels, electro hydraulic for rear wheels, front and rear wheels may be steered independently or together **Turning radius** (on concrete surface with front wheel steering) with duals, right 330" left 330" with singles, right 287" left 287"(on concrete surface with four-wheel steering) with duals, right 211" left 211" with singles, right 175" left 175" **Turning space diameter** (on concrete surface with front-wheel steering) with duals, right 689" left 689" with singles, right 603" left 603"(on concrete surface with four-wheel steering) with duals, right 459" left 459" with singles, right 384" left 384" **Power take-off** 1000 rpm at 2200 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 187°F. Eight gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1329.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1330—CASE 4890 DIESEL 12-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1000 rpm)								
253.41	2200	15.528	0.431	16.32	180	57	75	28.997
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
225.82	2306	14.516	0.452	15.56	178	57	75	......
0.00	2440	4.698	......	......	168	57	75	......
116.66	2384	9.609	0.579	12.14	172	58	76	......
253.81	2200	15.548	0.431	16.32	181	57	76	......
58.98	2411	7.219	0.861	8.17	171	58	76	......
172.73	2355	12.024	0.489	14.37	175	58	75	......
Av 138.00	**2349**	**10.602**	**0.540**	**13.02**	**174**	**57**	**76**	**28.983**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 8th (3I) Gear											
218.68	13778	5.95	2200	3.87	15.414	0.496	14.19	177	52	62	28.755
75% of Pull at Maximum Power—Ten Hours 8th (3I) Gear											
180.71	10611	6.39	2332	2.66	13.622	0.530	13.27	175	49	61	28.823
50% of Pull at Maximum Power—Two Hours 8th (3I) Gear											
123.55	7061	6.56	2373	1.81	10.880	0.619	11.36	173	57	71	28.680
50% of Pull at Reduced Engine Speed—Two Hours 10th (4L) Gear											
124.06	7088	6.56	1428	1.76	7.983	0.452	15.54	172	58	72	28.645
MAXIMUM POWER IN SELECTED GEARS											
189.97	27627	2.58	2299	14.87	2nd (1I) Gear			174	44	52	28.730
202.31	26801	2.83	2199	13.07	3rd (2L) Gear			175	48	56	28.790
213.38	24137	3.32	2199	8.59	4th (1H) Gear			175	47	54	28.800
222.64	20482	4.08	2200	6.14	5th (2I) Gear			174	46	53	28.800
222.46	19019	4.39	2200	5.55	6th (3L) Gear			174	44	50	28.810
223.22	16133	5.19	2200	4.48	7th (2H) Gear			174	43	49	28.810
224.81	14144	5.96	2201	3.79	8th (3I) Gear			176	42	46	28.840
223.87	11169	7.52	2200	2.85	9th (3H) Gear			174	45	51	28.810

LUGGING ABILITY IN RATED GEAR (8th 3I)

Crankshaft Speed rpm	2201	1977	1758	1539	1315	1091
Pounds Pull	14144	15239	16248	17301	17939	17723
Increase in Pull %	0	8	15	22	27	25
Horsepower	224.81	216.66	204.57	190.05	167.99	137.74
Miles Per Hour	5.96	5.33	4.72	4.12	3.51	2.91
Slip of Drivers %	3.79	4.18	4.48	4.94	5.25	5.25

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power 2 Hours	77.5
75% of Pull at Max. Power 10 Hours	78.0
50% of Pull at Max. Power 2 Hours	77.0
50% of Pull at Reduced Engine Speed 2 Hours	76.0
Bystander in 12th (4H) gear	88.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi	Four 20.8-34; 8; 16	Four 20.8-34; 8; 16
Ballast	—Liquid (each)	None	None
	Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi	Four 20.8-34; 8; 16	Four 20.8-34; 8; 16
Ballast	—Liquid (each inner)	905 lb	None
	Cast Iron (front end total)	900 lb	None
Height of drawbar		18 in	18 in
Static weight with operator—rear		11640 lb	11640 lb
	front	16820 lb	14110 lb
	Total	28460 lb	25750 lb

Department of Agricultural Engineering

Dates of Test: October 22-29, 1979

Manufacturer: J I Case Company, 700 State Street, Racine, Wisconsin 53404

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8444 **Fuel weight** 7.031 lbs/gal **Oil SAE** 30 **API service classification** SE-CD **To motor** 6.419 gal **Drained from motor** 5.738 gal **Transmission and hydraulic lubricant** Case TFD fluid **Final drive lubricant** Case FDL fluid **Total time engine was operated** 35 hours.

ENGINE Make Saab-Scania Dsl **Type** Six cylinder vertical with turbocharger **Serial No.** 5217709 **Crankshaft** lengthwise **Rated rpm** 2200 **Bore and stroke** 5.00" x 5.71" **Compression ratio** 14.7 to 1 **Displacement** 673 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** full flow centrifugal, separate cartridge for turbocharger oil **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for transmission and hydraulic oil **Fuel filter** two disposable cartridges **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: **Type** Four-wheel drive with duals **Serial No.** 8854468 **Tread width** rear 76" to 140" front 76" to 140" **Wheel base** 110" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 59.4" Vertical distance above roadway 40.3" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (3) range operator controlled powershift **Advertised speeds mph** first 2.0 second 2.7 third 3.1 fourth 3.4 fifth 4.2 sixth 4.4 seventh 5.2 eighth 5.9 ninth 7.4 tenth 9.9 eleventh 13.3 twelfth 18.2 reverse 3.4, 5.2, 7.4, 18.2 **Clutch** multiple dry disc hydraulically operated by foot pedal **Brakes** multiple dry disc hydraulically operated by foot pedal **Steering** hydrostatic for front wheels, electro-hydraulic for rear wheels, front and rear wheels may be steered independently or together **Turning radius** (on concrete surface with front-wheel steering) with duals, right 353" left 353" with singles, 317" left 317" (on concrete surface with four-wheel steering) with duals, right 225" left 225" with singles, right 188" left 188" **Turning space diameter** (on concrete surface with front wheel steering) with duals, right 734" left 734" with singles, right 664" left 664"(on concrete surface with four-wheel steering) with dual right 478" left 478" with singles, right 415" left 415" **Power take-off** 1000 rpm at 2200 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 141°F. Eight gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1330.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1331—VERSATILE 555 DIESEL 15-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1068 rpm)								
182.25	2849	11.746	0.455	15.52	181	54	75	28.930
Standard Power Take-off Speed (1000 rpm)—One Hour								
184.35	2667	11.286	0.432	16.33	182	54	75	28.930
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
164.79	3031	11.607	0.497	14.20	180	54	75	......
0.00	3191	5.038	......	......	176	54	74	......
84.87	3126	8.618	0.717	9.85	178	54	75	......
183.43	2850	11.798	0.454	15.55	183	55	76	......
42.83	3156	6.747	1.112	6.35	176	55	74	......
125.89	3086	10.187	0.571	12.36	180	56	76	......
Av 100.30	3073	8.999	0.633	11.15	179	55	75	28.947

DRAWBAR PERFORMANCE AT 2850 RPM

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 8th (M-3) Gear											
150.39	10331	5.46	2851	3.37	11.604	0.544	12.96	179	40	51	28.920
75% of Pull at Maximum Power—Ten Hours 8th (M-3) Gear											
125.48	79.36	5.93	3074	2.58	11.239	0.632	11.17	178	40	42	28.943
50% of Pull at Maximum Power—Two Hours 8th (M-3) Gear											
86.05	5297	6.09	3127	1.60	9.743	0.799	8.83	181	33	36	29.100
50% of Pull at Reduced Engine Speed—Two Hours 11th (H-1) Gear											
85.87	5284	6.09	1832	1.64	5.952	0.489	14.43	184	40	47	29.095
MAXIMUM POWER IN SELECTED GEARS											
128.39	23523	2.05	2987	14.98	2nd (L-2) Gear			179	29	32	29.450
143.47	22467	2.39	2849	11.94	3rd (L-3) Gear			180	42	50	28.970
149.43	19758	2.84	2847	7.81	4th (L-4) Gear			180	42	51	28.970
150.66	16420	3.44	2840	5.83	5th (L-5) Gear			179	43	53	28.980
152.51	14519	3.94	2847	4.92	6th (M-1) Gear			179	43	53	28.980
154.20	12685	4.56	2849	4.15	7th (M-2) Gear			178	42	52	29.000
153.91	10579	5.46	2850	3.45	8th (M-3) Gear			179	42	50	29.040
152.64	9233	6.20	2848	2.81	9th (M-4) Gear			178	42	52	29.000
153.25	7762	7.40	2850	2.33	10th (M-5) Gear			179	42	52	28.990
149.21	5907	9.47	2849	1.51	11th (H-1) Gear			179	42	52	28.990

DRAWBAR PERFORMANCE AT 2550 RPM

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 8th (M-3) Gear											
157.09	12124	4.86	2551	3.84	10.753	0.483	14.61	179	44	54	29.130
MAXIMUM POWER IN SELECTED GEARS											
138.86	23883	2.18	2680	14.79	3rd (L-3) Gear			181	32	35	29.380
146.25	22515	2.44	2553	11.67	4th (L-4) Gear			180	42	50	28.970
152.08	18777	3.04	2550	7.09	5th (L-5) Gear			180	42	52	28.970
154.39	16600	3.49	2548	5.91	6th (M-1) Gear			179	43	53	28.980
157.30	14573	4.05	2552	4.85	7th (M-2) Gear			179	42	52	29.000
157.35	12162	4.85	2550	3.84	8th (M-3) Gear			178	42	51	29.020
156.43	10625	5.52	2549	3.21	9th (M-4) Gear			178	42	52	28.990
156.10	8872	6.60	2549	2.73	10th (M-5) Gear			179	42	52	28.990
153.66	68.19	8.45	2549	1.84	11th (H-1) Gear			179	43	53	28.980

continued on next page

Department of Agricultural Engineering

Dates of Test: October 29 to November 15, 1979

Manufacturer: Versatile Manufacturing Co., 1260 Clarence Avenue, Winnipeg, Manitoba R3T 1T3

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8474 **Fuel weight** 7.056 lbs/gal **Oil** SAE 30 API **service classification** SB/SE-CA/CD **To motor** 6.523 gal **Drained from motor** 6.007 gal **Transmission and hydraulic lubricant** Esso Hydral 56 or equivalent **Final drive lubricant** SAE 90 **Total time engine was operated** 53.0 hours.

ENGINE Make Cummins Dsl **Type** eight cylinder vee with turbocharger **Serial No.** 20201005 **Crankshaft** lengthwise **Rated rpm** 2550 to 2850 **Bore and stroke** 4.625" x 4.125" **Compression ratio** 17.0 to 1 **Displacement** 555 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two cartridges **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type Four-wheel drive with duals **Serial No.** 555 80 131075 **Tread width** rear 60" to 125" front 60" to 125" **Wheel base** 120" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 72.0" Vertical distance above roadway 41.0" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** first 2.0 second 2.3 third 2.7 fourth 3.0 fifth 3.6 sixth 4.1 seventh 4.7 eighth 5.6 ninth 6.3 tenth 7.5 eleventh 9.5 twelfth 10.9 thirteenth 13.0 fourteenth 14.7 fifteenth 17.4 reverse 3.0, 3.6, 4.1, 4.7, 5.6 **Clutch** multiple wet disc hydraulically operated by foot pedal **Brakes** dual caliper disc operated hydraulically by foot pedal or mechanically by hand lever **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 227.5" left 227.5" **Turning space diameter** (on concrete surface without brake) right 465" left 465"**Power take-off** 1000 rpm at 2667 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 160°F. Ten gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1331.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1331—VERSATILE 555 DIESEL 15-SPEED

continued from previous page

LUGGING ABILITY IN RATED GEAR (8th M-3)

Crankshaft Speed rpm	2850	2568	2283	1992	1710	1418	1140
Pounds Pull	10579	11965	13208	14256	14457	14502	14325
Increase in Pull %	0	13	25	35	37	37	35
Horsepower	153.91	155.99	152.32	142.69	124.15	103.13	82.01
Miles Per Hour	5.46	4.89	4.32	3.75	3.22	2.67	2.15
Slip of Drivers %	3.45	3.92	4.38	4.69	5.00	5.00	4.69

TRACTOR SOUND LEVEL WITH CAB

	2850 RPM dB(A)	2550 RPM dB(A)
Maximum Available Power 2 Hours	82.5	79.0
75% of Pull at Max. Power 10 Hours	82.5	.....
50% of Pull at Max. Power 2 Hours	86.0	.....
50% of Pull at Reduced Engine Speed 2 Hours	79.5	.....
Bystander in 15th (H-5) gear	89.0	.....

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi	Four 18.4-38; 8; inner 16; outer 14	Four 18.4-38; 8; inner 16; outer 14
Ballast	—Liquid (each inner)	1385 lb	None
	Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi	Four 18.4-38; 8; inner 16; outer 14	Four 18.4-38; 8; inner 16; outer 14
Ballast	—Liquid (each)	890 lb	None
	Cast Iron (each)	None	None
Height of drawbar		18.5 in	18.5 in
Static weight with operator—rear		10280 lb	7510 lb
	Front	15700 lb	12140 lb
	Total	25980 lb	19650 lb

NEBRASKA TRACTOR TEST 1332—VERSATILE 875 DIESEL
12-SPEED

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1008 rpm)								
247.16	2100	15.390	0.439	16.06	182	56	75	28.940
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
226.25	2263	15.366	0.479	14.72	180	56	75	......
0.00	2408	5.140	......	......	174	58	75	......
118.05	2357	11.378	0.680	10.38	176	57	76	......
247.20	2100	15.361	0.438	16.09	181	57	75	......
59.73	2386	7.725	0.913	7.73	174	57	75	......
174.73	2327	13.741	0.555	12.72	178	57	76	......
Av 137.66	**2307**	**11.452**	**0.587**	**12.02**	**177**	**57**	**75**	**28.937**

DRAWBAR PERFORMANCE AT 2100 RPM

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 7th (2-3) Gear											
217.55	12386	6.59	2101	2.97	15.164	0.492	14.35	178	39	43	28.830
75% of Pull at Maximum Power—Ten Hours 7th (2-3) Gear											
184.02	9425	7.32	2316	2.25	14.690	0.565	12.53	176	30	32	28.778
50% of Pull at Maximum Power—Two Hours 7th (2-3) Gear											
126.53	6312	7.52	2360	1.49	12.239	0.684	10.34	177	27	29	28.800
50% of Pull at Reduced Engine Speed—Two Hours 11th (3-3) Gear											
126.55	6307	7.52	1214	1.53	7.982	0.446	15.85	176	32	36	28.765
MAXIMUM POWER IN SELECTED GEARS											
197.74	26795	2.77	2100	14.97	2nd (1-2) Gear			177	40	47	29.110
214.79	23364	3.45	2100	7.83	3rd (1-3) Gear			178	39	44	28.870
218.82	19963	4.11	2101	5.60	4th (1-4) Gear			178	39	45	28.880
221.66	17092	4.86	2100	4.32	5th (2-1) Gear			178	38	45	28.880
220.97	14552	5.69	2100	3.59	6th (2-2) Gear			178	34	44	28.910
221.00	12569	6.59	2100	3.01	7th (2-3) Gear			177	36	40	28.970
220.38	10733	7.70	2100	2.42	8th (2-4) Gear			178	34	44	28.890
216.15	8362	9.69	2099	1.92	9th (3-1) Gear			177	34	44	28.880

LUGGING ABILITY IN RATED GEAR (7th 2-3)

Crankshaft Speed rpm	2100	1895	1684	1469	1259	1052
Pounds Pull	12569	14926	17276	18557	18428	17123
Increase in Pull %	0	19	37	48	47	36
Horsepower	221.00	235.22	240.28	223.87	190.69	148.65
Miles Per Hour	6.59	5.91	5.22	4.52	3.88	3.26
Slip of Drivers %	3.01	3.83	4.32	4.81	4.97	4.48

TRACTOR SOUND LEVEL WITH CAB

	2100 RPM dB(A)	1900 RPM dB(A)	1750 RPM dB(A)
Maximum Available Power 2 Hours	82.0	81.5	82.0
75% of Pull at Max. Power 10 Hours	82.5	......	......
50% of Pull at Max. Power 2 Hours	82.5	......	......
50% of Pull at Reduced Engine Speed 2 Hours	81.5	......	......
Bystander in 12th (3-4) gear	91.0	......	......

DRAWBAR PERFORMANCE AT 1750 RPM

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
	–	**Maximum Available Power—Two Hours 7th (2-3) Gear**									
239.78	16577	5.42	1751	4.20	14.562	0.429	16.47	178	36	41	28.660

continued on next page

Department of Agricultural Engineering

Dates of Test: October 30 to November 13, 1979

Manufacturer: Versatile Manufacturing Co., 1260 Clarence Avenue, Winnipeg, Manitoba R3T 1T3

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8474 **Fuel weight** 7.056 lbs/gal **Oil SAE** 30 **API service classification** SB/SE-CA/CD **To motor** 9.850 gal **Drained from motor** 6.145 gal **Transmission and hydraulic lubricant** Esso Hydraul 56 or equivalent **Final drive lubricant** SAE 90 **Total time engine was operated** 53.5 hours.

ENGINE Make Cummins Diesel **Type** six cylinder vertical with turbocharger **Serial No.** 10866155 **Crankshaft** lengthwise **Rated rpm** 1750 to 2100 **Bore and stroke** 5.5" x 6.0" **Compression ratio** 14.1 to 1 **Displacement** 855 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two cartridges **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** four-wheel drive with duals **Serial No.** 875 80 054398 **Tread width** rear 72" to 122" front 72" to 122" **Wheel base** 130" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 80" Vertical distance above roadway 42" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** first 2.7 second 3.1 third 3.6 fourth 4.1 fifth 4.8 sixth 5.6 seventh 6.5 eighth 7.5 ninth 9.4 tenth 10.9 eleventh 12.6 twelfth 14.6 reverse 3.5, 4.0, 4.6, 5.4 **Clutch** two dry discs operated by foot pedal **Brakes** dual caliper disc operated hydraulically by foot pedal and mechanically by hand lever **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 239" left 239" **Turning space diameter** (on concrete surface without brake) right 490" left 490" **Power take-off** 1008 rpm at 2100 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 142°F. Eight gears were chosen between 15% slip and 10 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1332.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

The Agricultural Experiment Station
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University of Nebraska—Lincoln
H. W. Ottoson, Director

NEBRASKA TRACTOR TEST 1332—VERSATILE 875 DIESEL 12-SPEED

continued from previous page

MAXIMUM POWER IN SELECTED GEARS

209.13	26579	2.95	1942	14.84	3rd (1-3) Gear	177	38	44	29.110
220.91	26226	3.16	1751	12.81	4th (1-4) Gear	178	39	46	29.110
231.96	22016	3.95	1752	6.77	5th (2-1) Gear	179	39	45	28.880
238.19	19113	4.67	1752	5.21	6th (2-2) Gear	178	34	44	28.900
240.98	16652	5.43	1750	4.16	7th (2-3) Gear	178	35	43	28.940
242.03	14273	6.36	1752	3.42	8th (2-4) Gear	178	34	44	28.890
240.43	11223	8.03	1752	2.68	9th (3-1) Gear	178	36	45	28.880

DRAWBAR PERFORMANCE AT 1900 RPM

					Fuel Consumption			Temp Degrees F			
Hp	Drawbar pull lbs	Speed miles per hr	Crankshaft speed rpm	Slip of drivers %	Gal per hr	Lb per hp-hr	Hp-hr per gal	Cooling med	Air wet bulb	Air dry bulb	Barometer inches of Mercury
Maximum Available Power—Two Hours 7th (2-3) Gear											
234.34	14853	5.92	1899	3.63	14.810	0.446	15.82	178	35	40	28.685
MAXIMUM POWER IN SELECTED GEARS											
237.02	15028	5.91	1899	3.83	7th (2-3) Gear			177	35	40	28.690

TIRES, BALLAST AND WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi	Four 20.8-38; 8; inner 16; outer 14	Four 20.8-38; 8; inner 16; outer 14
Ballast	—Liquid (each inner)	920 lb	None
	Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi	Four 20.8-38; 8; inner 16; outer 14	Four 20.8-38; 8; inner 16; outer 14
Ballast	—Liquid (each inner)	1160 lb	None
	Cast Iron (each)	None	None
Height of drawbar		20 in	20 in
Static weight with operator	—rear	11740 lb	9900 lb
	front	17740 lb	15420 lb
	Total	29480 lb	25320 lb

Nebraska Tractor Tests Summarized (Tests from 1970 through 1979)

						ENGINE									–FUEL CONSUMPTION (HP Hours Per Gallon) @:–				
																PTO	–Varying Drawbar Power–		
MAKE AND MODEL OF TRACTOR	Test No.	Fuel Used	Weight With Ballast	Lbs. Ballast Carried	No. of Cyl-inders	Bore and Stroke	Dis-place-ment Cu. in.	Rated RPM Dwbr.	Max. PTO HP @ Rated Engine RPM	Std. PTO RPM	Max. PTO HP @ Std. PTO RPM	Max. Draw-bar HP	MPH @ Max. Dwbr. HP	Max. Lbs. Pull	Max. PTO HP @ Std. PTO RPM	Average @ Varying Power	Max. Avail-able Power	75% of Pull Max. Power	50% of Pull @ Max. Power
Allis-Chalmers																			
175	1156	Gas.	8400	2010	4	4.000x4.500	226	1800	60.88	540	56.02	53.17	5.50	6875	11.78	9.44	10.22	9.64	8.20
175	1043	Die.	8400	2460	4	3.875x5.000	235.9	2000	62.47	540	54.62	55.27	4.74	6407	15.07	13.18	12.73	13.33	11.91
185	1044	Die.	9400	2646	6	3.875x4.250	301	2200	74.87	540	70.72	65.07	4.58	7568	14.57	11.57	12.00	11.89	10.01
Two-Ten	1065	Die.	18045	5620	6	4.250x5.000	426	2200	122.74	1000	122.40	106.35	4.45	14023	15.21	11.79	13.14	11.85	9.70
5020	1270		3358	1298	2	3.62x3.74	77	2500	21.79	540	20.78	18.05	5.74	2346	13.99	11.77	11.07	10.51	8.62
5030	1271	Die.	3876	1346	2	3.82x3.94	90.1	2500	26.42	540	25.61	23.92	4.26	3389	13.82	11.28	11.64	11.48	9.68
5040	1230	Die.	6240	2180	3	3.740x4.330	143	2400	40.05	540	36.69	35.86	5.00	4837	15.47	11.80	12.58	12.74	10.44
5050 Diesel	1240	Die.	7960	3550	3	4.055x4.330	168	2700	51.46	540	47.16	45.22	5.68	6075	16.10	12.42	12.58	13.01	11.24
7000PS Diesel	1195	Die.	12580	3030	6	3.875x4.250	301	2200	106.44	1000	105.85	92.64	6.08	9907	15.70	12.21	13.21	12.27	10.16
7020 Power Shift	1259	Die.	15610	3840	6	3.875x4.250	301	2300	123.79	1000	123.50	105.36	6.59	12001	16.01	12.45	13.10	12.25	10.34
7020 Power Director	1260	Die.	15655	4085	6	3.875x4.250	301	2300	123.85	1000	125.51	107.36	6.63	11964	16.08	12.12	13.09	12.08	10.13
7030 Diesel	1119	Die.	16560	4130	6	4.250x5.000	426	2300	130.98	1000	131.14	113.28	4.94	12610	15.45	11.76	12.92	11.90	9.91
7040 Diesel	1166	Die.	17380	5585	6	4.250x5.000	426	2300	136.49	1000	136.26	116.21	6.58	13619	15.35	11.78	12.94	11.86	9.80
7040PS Diesel	1196	Die.	17355	4977	6	4.250x5.000	426	2300	136.30	1000	136.15	117.75	4.61	13547	15.51	11.95	13.05	12.29	10.39
7045 Power Director	1261	Die.	18980	4645	6	4.250x5.000	426	2300	146.18	1000	146.46	127.84	7.04	15430	14.62	11.26	12.16	11.40	9.72
7045 Powershift Diesel	1308	Die.	18990	4390	6	4.25x5.00	426	2300	146.88	1000	146.67	127.17	4.92	15449	14.92	11.32	12.58	11.71	9.62
7050 Diesel	1120	Die.	19530	5005	6	4.250x5.000	426	2300	156.49	1000	156.63	135.11	5.47	16206	16.04	12.69	13.47	12.67	10.53
7060 Diesel	1167	Die.	20490	6500	6	4.250x5.000	426	2300	161.51	1000	160.44	140.59	6.94	17370	15.99	12.71	13.63	12.75	10.55
7060PS Diesel	1197	Die.	20560	5915	6	4.250x5.000	426	2300	161.42	1000	161.65	144.13	4192	17851	16.08	12.76	13.80	12.98	10.79
7080 Diesel	1168	Die.	21720	7115	6	4.250x5.000	426	2550	181.51	1000	181.51	153.78	4.58	18478	15.71	12.24	13.23	12.11	10.02
7580 4WD	1229	Die.	25000	1490	6	4.250x5.000	426	2550	186.35	1000	186.35	160.79	6.91	23310	14.81	11.47	12.22	11.39	9.40
8550 Diesel	1262	Die.	29360	2320	6	5.250x5.625	731	2500	253.88	1000	253.88	223.39	7.24	26220	14.57	10.94	12.47	11.45	9.35
Belarus																			
MTZ 80 Diesel	1139	Die.	11575	3735	4	4.331x4.921	288.7	2200	74.79	1000	73.88	65.64	5.08	8141	15.30	13.07	13.12	13.12	11.32
250 Diesel	1183	Die.	5490	939	2	4.134x4.724	127	1800	24.95	540	25.02	21.81	4.54	2280	15.56	13.23	13.19	13.20	11.80
T25A Diesel	1200	Die.	5490	939	2	4.134x4.724	127	1800	28.70	540	28.15	24.46	4.51	2570	13.95	13.46	12.21	13.48	11.94
David Brown																			
885 Gasoline	1143	Gas.	6550	2530	3	3.939x4.000	146.1	2200	39.26	1000†	37.26	32.92	4.61	5308	10.96	8.19	7.55	7.00	7.21
885 Diesel	1137	Die.	6480	2125	3	3.939x4.500	164.4	2200	43.20	1000†	40.87	37.16	4.57	5135	16.61	14.03	13.85	13.73	12.67
990 Diesel	1144	Die.	9350	4690	4	3.939x4.000	194.9	2200	53.77	1000†	50.48	46.34	5.54	7335	15.53	13.23	13.37	12.91	11.14
995 Diesel	1136	Die.	9475	4325	4	3.939x4.500	219	2200	58.77	1000†	55.33	50.42	5.44	7317	16.60	13.94	13.78	13.60	12.40
1210 Diesel	1142	Die.	10440	4640	4	3.939x4.500	219	2300	65.98	1000†	59.50	57.23	6.16	8097	16.40	14.43	13.61	14.36	12.93
1212 Diesel	1138	Die.	10435	4030	4	3.939x4.500	219	2300	65.38	1000†	58.25	54.10	6.92	8137	15.35	13.84	12.56	13.27	11.82
Case																			
770 Manual	1088	Die.	12300	2230	4	4.125x5.000	267	2000	63.90	540	62.85	57.12	5.07	8853	15.16	12.43	13.20	12.67	10.64
770 Power Shift	1058	Die.	10950	1730	4	4.125x5.000	267	1900	56.77	538	56.77	52.05	4.30	7627	15.08	12.35	13.76	12.58	11.00
770 Power Shift	1089	Die.	12375	2215	4	4.125x5.000	267	2000	64.56	540	61.93	57.57	4.28	8927	14.72	12.22	12.62	12.45	10.53
770 Manual	1061	Gas.	10545	1736	4	4.000x5.000	251	1900	56.32	538	56.32	50.09	4.57	7474	11.19	7.82	9.83	8.17	6.53
870 Manual	1077	Die.	13520	3450	4	4.625x5.000	336	2000	78.08	1000	76.63	70.19	5.03	9733	15.46	13.01	13.35	13.44	11.89
870 Power Shift	1076	Die.	13550	3320	4	4.625x5.000	336	2000	77.92	1000	77.11	67.47	4.23	10075	14.42	12.15	12.13	12.41	11.10
870 Manual	1060	Gas.	11705	2786	4	4.375x5.000	301	1900	71.06	538	71.06	63.04	5.82	9105	11.86	8.63	10.09	8.76	7.47
870 Manual Diesel	1149	Die.	13510	3435	4	4.625x5.000	336	2100	80.20	1000	77.93	71.09	5.23	10047	14.52	12.13	12.42	12.53	10.88
870 Power Shift	1150	Die.	13760	3664	4	4.625x5.000	336	2100	80.49	1000	76.52	71.04	4.39	10030	13.64	11.60	11.49	12.04	10.88
970 Manual	1034	Die.	13700	3516	6	4.125x5.000	401	1900	85.70	538	35.70	73.28	3.81	10604	15.64	12.79	12.79	12.93	11.48
970 Manual	1078	Die.	14470	3390	6	4.125x5.000	401	2000	93.87	1000	92.11	81.27	4.91	10644	15.51	12.75	13.53	13.26	11.50
970 Power Shift	1037	Die.	13870	3536	6	4.125x5.000	401	1900	85.31	538	85.31	74.53	4.28	10671	15.71	12.71	13.51	12.85	11.49
970 Power Shift	1068	Die.	14510	3320	6	4.125x5.000	401	2000	93.41	1000	93.47	81.90	6.13	11009	15.11	12.31	12.88	12.37	12.12
970 Manual	1039	Gas.	13540	3492	6	4.000x5.000	377	1900	85.02	538	85.02	79.66	4.66	10540	10.34	7.53	8.99	8.40	6.86
970 Power Shift	1038	Gas.	13665	3536	6	4.000x5.000	377	1900	85.23	538	85.23	76.79	5.79	10567	10.15	7.55	8.96	8.15	6.99

1070, 1090 Manual	1035	Die.	14995	4686	6	4.375x5.000	451	2000	100.73	1000	96.50	85.18	4.90	11203	15.70	12.70	13.70	12.82	11.17
1070 Manual	1067	Die.	17520	6110	6	4.375x5.000	451	2100	107.36	1000	103.91	93.70	4.50	13161	15.75	12.42	13.05	12.62	11.34
1070, 1090 Power Shift	1036	Die.	15140	4640	6	4.375x5.000	451	2000	100.21	1000	98.74	85.75	4.99	10912	15.90	12.80	12.93	12.98	11.65
1070 Power Shift	1066	Die.	17675	6165	6	4.375x5.000	451	2100	108.10	1000	99.92	95.37	4.44	13780	15.44	12.43	12.62	12.68	11.04
1170	1062	Die.	18520	4980	6	4.375x5.000	451	2100	121.93	1000	118.13	110.93	4.21	13730	16.46	12.86	13.94	13.09	11.31
1270	1103	Die.	17625	4185	6	4.375x5.000	451	2100	126.70	1000	126.60	109.77	6.79	12690	14.52	11.05	12.13	11.55	9.81
1270	1160	Die.	18910	3440	6	4.375x5.000	451	2100	135.39	1000	135.41	121.83	6.46	15648	14.23	11.14	12.16	11.49	9.88
1370	1102	Die.	20960	5670	6	4.625x5.000	504	2100	142.51	1000	143.64	123.01	4.78	16609	15.37	11.45	12.73	11.82	10.16
1370 Diesel	1148	Die.	20290	4945	6	4.625x5.000	504	2200	155.56	1000	156.32	134.25	5.00	16480	15.01	10.95	12.04	10.91	9.109
1410 Manual	1209	Die.	10910	3160	4	3.939x4.500	219	2300	80.88	540	79.35	69.25	5.32	7846	17.47	14.69	14.20	14.38	12.45
1410 Power Shift	1210	Die.	10990	3150	4	3.939x4.500	219	2300	80.61	540	76.21	67.98	7.90	7816	16.86	13.76	13.34	13.21	11.45
1570	1218	Die.	20350	4060	6	4.625x5.000	504	2100	180.41	1000	180.41	152.96	5.02	17115	15.09	12.47	12.72	12.46	10.88
2090 Manual Diesel	1304	Die.	15030	3120	6	4.625x5.000	504	2100	108.74	1000	108.74	94.99	4.60	11655	15.40	12.23	13.41	12.69	10.73
2090 Power Shift	1295	Die.	15190	3160	6	4.625x5.00	504	2100	108.29	1000	108.29	93.60	4.81	11211	14.94	11.77	12.49	11.96	10.14
2290 Manual Diesel	1296	Die.	15400	2630	6	4.625x5.000	504	2100	128.80	1000	128.80	109.36	5.32	12635	14.52	11.66	12.46	11.73	10.07
2290 Powershift Diesel	1297	Die.	15840	2140	6	4.625x5.000	504	2100	129.08	1000	129.08	111.68	6.25	12749	13.76	11.53	12.65	11.37	9.77
2390 Powershift Diesel	1302	Die.	18710	3120	6	4.625x5.000	504	2100	160.72	1000	160.72	146.01	6.59	16020	15.23	12.41	13.20	12.66	10.99
2470	1114	Die.	20485	None	6	4.625x5.000	504	2200	174.20	1000	174.20	154.24	5.67	18050	15.22	12.33	13.30	12.55	10.86
2590 Powershift Diesel	1303	Die.	20500	4760	6	4.625x5.000	504	2100	180.38	1000	180.38	159.01	6.57	17865	15.53	12.97	13.42	13.03	11.67
2670 Diesel	1165	Die.	25260	4450	6	4.625x5.000	504	2200	219.44	1000	291.44	194.60	5.28	23618	15.29	12.59	13.42	12.60	10.88
2870 Diesel	1241	Die.	28150	3050	6	5.000x5.710	673	2200	252.10	1000	252.10	219.61	5.72	26386	15.45	12.01	12.98	12.37	10.40
M-B 4/94	1211	Die.	13110	4620	6	3.819x5.039	346	2550	73.33	1000†	70.17	66.33	5.33	10558	15.13	10.68	12.55	11.65	9.49
4490 Diesel	1328	Die.	22450	1610	6	4.625x5.000	504	2200	175.20	1000	175.20	152.80	7.14	21400	15.27	12.36	13.30	12.52	10.87
4690 Diesel	1329	Die.	25230	2920	6	4.625x5.000	504	2200	219.62	1000	219.62	195.60	5.97	24564	15.26	12.76	13.39	12.84	11.21
4890 Diesel	1330	Die.	28460	2710	6	5.00x5.71	673	2200	253.41	1000	253.41	224.81	5.96	27627	16.32	13.02	14.19	13.27	11.36
John Deere																			
830 Diesel	1146	Die.	5714	1338	3	3.860x4.330	152	2400	35.30	540	32.62	28.46	5.19	4252	14.74	11.37	11.84	11.03	9.09
850	1280	Die.	3528	992	3	3.15x3.35	78	2600	22.27	540	20.66	18.92	4.90	2699	14.26	11.51	11.23	11.22	10.21
950	1281	Die.	3615	803	3	3.54x3.54	105	2400	27.36	540	28.05	23.46	4.98	3056	14.68	12.36	12.42	12.23	10.63
1050 Diesel	1327	Die.	4140	730	3	3.54x3.54	105	2400	33.41	540	33.42	28.15	5.27	3466	15.46	12.36	12.34	11.99	10.13
1530 Diesel	1147	Die.	6863	1909	3	4.020x4.330	164	2500	45.38	540	41.36	38.86	5.58	5139	14.28	11.20	12.04	11.47	9.78
2030	1085	Die.	7430	2060	4	4.020x4.330	219	2500	60.65	540	55.23	52.33	5.92	6472	16.26	12.16	12.73	11.82	10.53
2030	1084	Gas.	7430	2200	4	4.020x4.330	219	2500	60.34	540	55.38	51.33	5.93	6340	11.59	7.69	8.65	7.66	5.88
2040 Diesel	1191	Die.	6420	1620	3	4.020x4.330	164	2500	40.86	540	37.62	34.15	5.64	4634	15.50	11.18	11.87	11.15	9.51
2240 Diesel	1192	Die.	7340	2390	3	4.190x4.330	179	2500	50.37	540	46.78	41.28	5.54	5433	15.20	11.08	11.57	11.18	9.51
2630	1157	Die.	8430	2630	4	4.190x5.000	276	2500	70.37	540	69.02	58.15	5.38	6470	16.01	10.89	12.10	10.98	8.95
2840 Diesel	1249	Die.	10500	1695	6	4.020x4.330	329	2500	80.65	1000	76.27	67.47	6.21	8386	16.02	11.52	12.36	11.57	9.59
4030 Quad-Range	1111	Die.	10150	970	6	4.000x4.330	329	2500	80.33	1000	77.72	68.76	6.10	7512	15.40	10.69	11.71	10.99	8.92
4040 Diesel	1267	Die.	12055	1165	6	4.250x4.750	404	2200	90.80	1000	90.80	76.81	7.02	8936	13.49	10.59	11.24	10.96	9.21
4240 Diesel	1266	Die.	14090	1695	6	4.5625x4.75	466	2200	110.94	1000	110.94	95.18	5.42	11492	14.33	11.09	12.05	11.35	9.52
4230 Quad-Range	1112	Die.	14150	3250	6	4.250x4.750	404	2200	100.32	1000	100.32	86.36	6.65	11116	14.10	11.61	12.02	11.92	10.10
4320 Syncro-Range	1050	Die.	14380	3706	6	4.250x4.750	404	2200	116.55	1000	108.02	104.49	6.45	11783	15.35	9.46	12.73	11.77	9.75
4430 Quad-Range	1110	Die.	15060	3710	6	4.250x4.750	404	2200	125.88	1000	125.88	108.46	6.58	12032	15.56	12.13	12.94	11.96	10.17
4440 Diesel	1265	Die.	15540	2270	6	4.5625x4.75	466	2200	130.58	1000	130.58	112.56	5.02	13392	15.21	11.73	12.69	11.83	9.90
4620 Power Shift	1064	Die.	18585	3655	6	4.250x4.750	404	2200	135.62	1000	130.79	115.58	4.73	14471	15.70	11.35	12.23	11.27	9.16
4620 Syncro-Range	1073	Die.	18640	3840	6	4.250x4.750	404	2200	135.76	1000	130.27	117.38	5.08	13916	15.57	11.51	12.66	11.86	9.91
4630 Power Shift	1113	Die.	16250	None	6	4.250x4.750	404	2200	150.66	1000	150.66	134.56	10.26	14478	15.68	12.43	13.34	12.88	10.59
4640 Diesel	1264	Die.	18120	None	6	4.5625x4.75	466	2200	156.30	1000	156.30	137.40	6.45	15362	15.61	12.29	13.30	12.15	10.32
4840 Diesel	1263	Die.	20370	2240	6	4.5625x4.75	466	2200	180.63	1000	181.63	157.09	4.76	17307	15.85	12.47	13.35	12.54	10.76
6030	1100	Die.	18180	None	6	4.750x5.000	531	2100	175.99	1000	175.99	155.42	6.65	15303	15.82	12.70	13.52	12.72	11.04
7020	1063	Die.	19570	1075	6	4.250x4.750	404	2200	146.17	1000	146.17	131.50	5.34	18726	14.28	11.41	12.82	11.81	9.51
7520	1101	Die.	22320	None	6	4.750x5.000	531	2100	175.82	1000	175.82	165.21	5.69	22517	15.18	12.37	13.76	12.82	10.97
8430 Diesel	1179	Die.	23100	290	6	4.563x4.750	466	2100	178.16	993	178.16	160.39	5.56	22503	15.12	11.96	13.44	12.64	10.42
8630 Diesel	1180	Die.	26480	1950	6	5.125x5.000	619	2100	225.59	993	225.59	202.31	4.58	26443	15.34	12.27	13.67	12.80	10.78
8440 Diesel	1323	Die.	26590	None	6	4.563x4.75	466	2100	179.83	1000	179.83	163.26	4.97	25383	15.86	12.55	14.29	13.06	11.25
8640 Diesel	1324	Die.	28270	None	6	5.125x5.00	619	2100	228.75	1000	228.75	208.38	4.63	27782	15.61	12.40	14.06	13.14	11.16
Deutz																			
4006	1075	Die.	7005	2520	3	3.940x4.720	172.5	2150	36.95	540	32.15	32.30	5.00	5043	17.76	13.93	14.84	14.00	12.78
D4506	1131	Die.	7390	2880	3	3.940x4.720	172.5	2300	43.15	540	42.17	37.07	4.68	5472	18.02	14.12	14.49	14.05	12.46
5506	1104	Die.	9780	4490	4	3.940x4.720	230	2300	56.08	540	52.88	48.81	6.33	6996	17.77	13.84	14.37	13.69	12.06
6006	1091	Die.	11250	4920	4	3.940x4.720	230	2300	65.30	1000	63.93	58.15	7.02	8623	15.26	13.53	13.02	13.64	11.75
D6206	1219	Die.	8780	3410	4	3.937x4.724	230	2050	60.23	540	57.00	52.41	6.04	6944	17.58	15.43	15.10	15.34	14.05

Nebraska Tractor Tests Summarized (Tests from 1970 through 1979)

					ENGINE										—FUEL CONSUMPTION (HP Hours Per Gallon) @:—	PTO	—Varying Drawbar Power—		
MAKE AND MODEL OF TRACTOR	Test No.	Fuel Used	Weight With Ballast	Lbs. Ballast Carried	No. of Cyl-inders	Bore and Stroke	Dis-place-ment Cu. in.	Rated RPM Dwbr.	Max. PTO HP @ Rated Engine RPM	Std. PTO RPM	Max. PTO HP @ Std. PTO RPM	Max. Draw-bar HP	MPH @ Max. Dwbr. HP	Max. Lbs. Pull	Max. PTO HP @ Std. PTO RPM	Average @ Varying Power	Max. Avail-able Power	75% of Pull Max. Power	50% of Pull @ Max. Power
Deutz (cont.)																			
D6806	1220	Die.	11000	4605	4	3.937x4.724	230	2300	68.18	540	62.52	61.87	7.15	9095	16.39	14.73	14.63	15.05	13.52
8006	1074	Die.	11060	4210	6	3.940x4.720	345	2100	85.51	1000	81.18	74.46	6.73	8898	16.87	14.57	13.91	14.17	12.76
10006	1105	Die.	14440	6060	6	3.940x4.720	345	2400	105.04	1000	101.19	90.92	5.80	9979	14.39	13.46	12.14	13.52	1170
13006	1092	Die.	15980	6375	6	3.940x4.720	345	2400	125.71	1000	133.27	114.85	8.47	10677	17.39	14.10	14.36	13.87	12.07
D13006	1130	Die.	16125	4075	6	3.940x4.720	345	2400	125.77	1000	126.19	110.24	5.74	13509	17.71	14.00	14.97	13.83	11.95
DX-90 Diesel	1305	Die.	13150	3210	5	3.94x4.72	287	2300	84.47	1000	80.82	74.19	6.53	8766	16.45	14.15	13.81	14.07	12.39
DX-110 Diesel	1306	Die.	14940	2360	6	3.94x4.72	345	2300	100.29	1000	93.61	90.82	7.00	11773	15.10	13.71	13.52	14.03	12.60
DX-160 Diesel	1307	Die.	18710	3870	6	4.02x4.92	374	2200	145.41	1000	140.99	124.24	5.63	15172	17.82	14.47	14.56	13.95	11.93
Fiat																			
420	1293	Die.	6035	2115	3	3.74x4.33	143	2200	41.34	540	37.45	37.71	5.65	5299	14.81	12.93	13.30	13.92	12.35
580	1292	Die.	9210	2580	3	4.055x4.33	168	2700	51.61	540	48.42	44.20	3.38	8899	14.93	12.59	12.14	12.70	10.50
780	1294	Die.	10230	2830	4	4.055x4.33	224	2500	70.36	540	66.30	64.43	4.06	7776	15.41	13.62	13.93	14.17	12.50
Ford																			
1600 Diesel	1228	Die.	3840	1150	2	3.543x3.937	77.6	2500	23.02	540	19.78	18.53	5.76	2634	14.14	11.82	11.26	11.45	9.72
1700 Diesel	1325	Die.	3725	1110	2	3.54x3.94	77.6	2500	2326	540	23.02	20.21	5.54	2801	13.02	11.21	10.89	11.48	10.41
1900 Diesel	1326	Die.	4160	1225	3	3.35x3.31	87.2	2800	26.88	540	25.68	23.49	6.20	29.64	12.58	10.38	10.41	10.89	9.32
2000 6-Speed	1054	Gas.	5995	1946	3	4.200x3.800	158	2000	30.58	540	29.24	27.13	4.00	4535	11.00	8.17	9.48	8.85	6.97
2000 6-Speed	1053	Die.	6000	1902	3	4.200x3.800	158	2000	31.97	540	30.05	27.49	5.50	4452	16.22	12.70	13.47	12.78	10.93
2600 6-Speed	1204	Die.	5990	1550	3	4.200x3.800	158	2000	32.38	540	30.51	27.93	5.57	4591	14.88	11.51	12.27	11.74	10.22
2600 6-Speed	1206	Gas.	6000	1645	3	4.200x3.800	158	2000	32.78	540	31.03	28.25	5.57	4198	11.14	7.89	8.83	8.17	6.73
2600 8-Speed	1222	Die.	6000	460	3	4.200x3.800	158	2000	32.47	540	30.76	28.18	5.56	4452	14.62	11.18	11.94	11.22	9.18
2600 8-Speed	1207	Gas.	6000	1710	3	4.200x3.800	158	2000	34.18	540	32.07	30.20	5.49	4455	11.54	8.38	9.45	8.64	7.15
3000 6-Speed	1051	Gas.	6890	2750	3	4.200x3.800	158	2100	38.33	540	34.34	32.40	5.84	5109	11.23	8.40	9.26	9.00	7.27
3000 6-Speed	1052	Die.	6895	2676	3	4.200x4.200	175	2000	40.63	540	39.07	35.88	5.51	5208	15.94	13.18	13.57	13.30	11.63
3600 6-Speed	1203	Die.	6860	2445	3	4.200x4.200	175	2000	40.49	540	37.64	34.47	5.96	5114	15.32	12.12	12.84	12.34	9.97
3600 6-Speed	1208	Gas.	6900	2665	3	4.200x4.200	175	2000	40.17	540	37.91	35.53	5.91	5158	11.23	8.07	9.29	8.77	7.05
3600 8-Speed	1221	Die.	6890	1300	3	4.200x4.200	175	2000	40.55	540	38.31	34.10	5.96	5277	15.33	12.40	12.93	12.51	10.36
3600 8-Speed	1226	Gas.	6900	1500	3	4.200x4.200	175	2000	40.62	540	38.29	35.90	5.93	5123	11.42	8.16	9.02	8.57	6.88
4100 8-Speed	1202	Die.	7500	2590	3	4.200x4.400	183	2000	45.46	540	41.13	41.14	4.63	5557	15.59	11.57	12.47	11.96	10.36
4600 8-Speed	1223	Die.	8220	2340	3	4.400x4.400	201	2200	52.44	540	46.31	45.57	5.24	6342	14.59	11.49	11.82	11.85	10.77
5600 8-Speed	1201	Die.	9690	3785	4	4.200x4.200	233	2100	60.46	540	56.85	52.22	5.49	7105	15.77	12.83	12.87	12.88	11.02
5600 16-Speed	1227	Die.	9690	2380	4	4.200x4.200	233	2100	58.46	540	56.00	49.79	5.36	7140	15.06	11.94	12.07	11.94	10.42
6600 8-Speed	1217	Die.	9660	3780	4	4.400x4.200	256	2100	70.56	1000	70.07	61.36	6.91	7131	15.43	12.86	12.28	12.71	11.35
6600 16-Speed	1224	Die.	9700	2680	4	4.400x4.200	256	2100	68.10	1000	68.05	58.74	5.22	7267	14.97	12.64	12.05	12.77	11.05
6700 16-Speed	1244	Die.	9690	1180	4	4.400x4.200	255	2100	68.94	1000	68.62	58.06	7.55	6787	13.77	12.23	11.24	12.38	11.16
7000	1093	Die.	10795	4580	4	4.400x4.200	256	2100	83.49	540	78.81	71.42	5.71	8138	16.64	13.53	13.21	12.86	11.51
7600 16-Speed	1225	Die.	10760	3320	4	4.400x4.200	256	2100	84.79	1000	85.16	67.95	5.61	7779	15.95	12.35	12.44	11.77	9.92
7700 16-Speed	1242	Die.	10800	2400	4	4.400x4.200	255	2100	84.38	1000	84.29	71.57	7.28	7688	15.24	11.65	11.92	11.21	9.71
8700 16-Speed	1245	Die.	14760	2490	6	4.400x4.400	401	2300	110.58	1000	99.56	100.12	6.94	11581	15.02	11.91	12.37	12.28	10.93
8600 Dual Power	1121	Die.	14790	3360	6	4.400x4.400	401	2300	110.69	1000	99.32	93.62	4.88	11363	15.69	12.84	12.71	12.74	11.19
9600 Dual Power	1122	Die.	18000	6140	6	4.400x4.400	401	2200	135.46	1000	128.46	116.40	6.65	12203	16.88	12.99	13.31	12.64	11.06
9700 16-Speed	1243	Die.	17480	4620	6	4.400x4.400	401	2200	135.64	1000	129.25	118.08	6.55	15010	15.95	11.77	12.63	11.97	10.34
TW-10 Diesel	1301	Die.	15190	2325	6	4.4x4.4	401	2300	110.24	1000	101.09	97.24	8.25	12006	14.86	11.50	12.17	11.91	10.20
TW-20 Diesel	1300	Die.	17180	3495	6	4.4x4.4	401	2200	135.60	1000	131.43	121.47	7.85	14155	16.22	11.78	13.08	12.04	10.09
TW-30 Diesel	1299	Die.	19830	5205	6	4.4x4.4	401	2200	163.28	1000	157.04	144.17	8.32	16553	16.76	12.49	13.67	12.58	10.79
FW 20	1291	Die.	31000	1385	8	4.625x4.125	555	2850	....	....	....	156.85	5.45	27155	....	....	12.12	11.69	10.15
FW30	1288	Die.	31720	410	8	5.500x4.750	903	2600	(1)	....	....	212.02	6.64	27803	....	....	13.71	12.24	10.08
FW 30 without PTO												220.38	5.85	28302	....	....	14.16	12.73	10.96
FW 40	1290	Die.	32950	2320	8	5.500x4.750	903	2600	....	....	....	238.78	6.60	28245	....	....	13.83	12.84	10.73
FW 60	1289	Die.	33970	2870	8	5.500x4.750	903	2600	....	....	....	285.57	7.46	29304	....	....	14.90	13.38	11.27

(1) Equipped with controlled, hydrostatic pto with 105 output horsepower at 1000 rpm.

International Harvester																			
Int'l Hydro 100	1156	Die.	12765	635	6	4.300x5.000	436	2400	104.17	1000	101.30	82.13	6.42	9801	14.83	10.50	10.35	10.19	8.95
Hydro 186 Diesel	1257	Die.	13430	None	6	4.300x5.000	436	2400	105.02	1000	100.31	82.77	6.56	11312	13.68	10.06	9.83	9.84	8.46
IH 284	1277	Gas.	3596	1166	4	2.756x2.992	71.3	2600	25.75	1000	24.33	20.64	4.02	2561	11.62	9.54	9.77	8.97	7.52
Int'l 354	1115	Gas.	5925	1890	4	3.875x4.000	143.1	1875	32.58	540	32.22	28.37	5.01	4674	10.36	7.99	9.03	8.55	7.23
Int'l. 454	1097	Die.	7470	2750	3	3.875x5.060	179	2200	40.47	1000	40.47	35.83	4.10	5583	14.68	11.48	12.87	11.85	10.07
Int'l. 454	1096	Gas.	7120	2720	4	3.375x4.390	157	2200	40.86	1000	40.86	35.24	4.13	5329	10.94	8.03	9.22	8.40	7.12
Int'l. 464 Gas	1126	Gas.	7355	2460	4	3.562x4.390	175	2400	45.74	540	43.64	42.20	4.51	5465	10.80	8.00	9.65	8.86	7.70
Int'l. 464 Diesel	1127	Die.	7570	2440	3	3.875x5.060	179	2400	44.42	540	41.73	39.97	4.53	5488	14.41	11.49	12.25	12.57	10.67
484 Utility Dsl.	1312	Die.	7710	2710	3	3.875x5.06	179	2200	42.42	540	41.79	38.06	4.78	5500	14.81	11.85	12.75	12.39	10.63
Int'l. 574	1099	Die.	8675	3525	4	3.875x5.060	238.6	2200	52.55	1000	52.55	46.95	4.40	6446	14.46	11.53	12.86	12.38	10.57
Int'l. 574	1098	Gas.	8250	3415	4	3.813x4.390	200.3	2200	52.97	1000	52.97	45.16	4.39	6360	11.25	8.55	9.63	9.05	7.43
584 Utility & Rowcrop	1313	Die.	8850	3185	4	3.875x4.38	206	2300	52.54	540	50.96	47.47	5.07	6859	15.23	12.34	13.41	12.95	11.10
Int'l. 666 Gas	1152	Gas.	10050	2360	6	3.750x4.390	290.8	2000	66.30	540	66.30	58.68	5.13	7981	11.95	8.45	10.08	9.04	7.27
Int'l. 666 Diesel	1151	Die.	10330	2130	6	3.875x4.410	312	2000	66.29	540	66.29	58.34	5.12	8012	14.24	11.76	12.60	11.56	10.16
Int'l. 674 Utility Gas	1128	Gas.	8330	3035	4	3.812x4.390	200	2400	58.53	540	56.01	53.48	7.04	6583	10.83	8.19	9.40	9.11	8.39
Int'l 674 Utility Die	1129	Die.	8690	3040	4	3.875x5.060	238.6	2400	61.56	540	58.79	55.91	7.03	6833	15.25	12.16	13.52	13.11	11.31
684 Utility & Rowcrop	1314	Die.	9660	3825	4	3.875x5.06	239	2400	62.52	540	58.75	55.92	5.29	6858	15.55	12.21	13.27	13.02	11.28
784 Rowcrop Diesel	1315	Die.	9920	3830	4	3.937x5.062	246	2400	67.48	1000	64.09	58.65	5.18	8105	16.06	12.75	13.25	12.77	11.07
Hydro 84 Diesel	1316	Die.	9120	3115	4	3.937x5.062	246	2400	58.73	540	56.68	43.59	7.60	6572	14.01	10.50	10.13	9.82	8.34
Int'l. Hydro 70 Gas	1154	Gas.	10140	2265	6	3.750x4.390	290.8	2400	69.61	540	64.10	54.62	4.57	8427	11.10	7.17	7.654	6.75	5.48
Int'l. Hydro 70 Die	1155	Die.	10430	1990	6	3.875x4.410	312	2400	69.51	540	65.41	53.49	4.03	8310	12.40	9.31	9.451	8.756	6.965
Farmall 766	1117	Die.	12720	1380	6	3.875x5.085	360	2600	85.45	1000	85.66	74.54	6.48	9236	14.85	10.36	12.08	11.05	9.13
Farmall 766	1094	Gas.	11880	1480	6	3.750x4.390	290.8	2400	79.73	1000	73.96	71.44	4.77	8841	11.78	8.18	9.77	8.68	7.12
826 Diesel	1045	Die.	13840	4030	6	3.875x5.060	358	2400	92.19	1000	85.34	81.80	5.98	9631	15.42	11.89	12.76	12.32	10.55
826 Hydrostatic	1046	Die.	13840	3504	6	3.875x5.060	358	2400	84.66	1000	79.00	63.54	6.60	8780	14.15	10.45	10.12	9.64	8.46
886 Diesel	1254	Die.	13040	970	6	3.875x5.085	360	2400	86.14	1000	83.16	75.67	6.35	10485	14.29	10.55	11.77	10.92	9.21
Farmall 966	1082	Die.	13500	1875	6	4.300x4.750	414	2400	96.01	1000	93.50	82.75	4.41	10041	15.74	11.38	12.57	12.00	10.28
Farmall 966 Hydro	1095	Die.	12875	1175	6	4.300x4.750	414	2400	91.38	1000	88.29	71.43	8.51	8909	13.80	9.33	9.63	9.19	7.94
Int'l. 966 Diesel	1123	Die.	13670	1970	6	4.300x4.750	414	2600	100.80	1000	101.52	88.94	6.58	10036	15.68	10.94	12.36	11.68	9.84
986 Diesel	1255	Die.	14000	970	6	4.300x5.000	436	2400	105.68	1000	104.18	94.05	6.73	12176	15.56	11.34	12.65	11.72	10.02
1026 Hydrostatic	1047	Die.	14975	3932	6	4.321x4.625	407	2400	112.45	1000	110.71	84.34	6.66	9583	15.58	10.48	10.26	9.61	8.36
F'all 1066 Hyd.Turbo	1083	Die.	13190	1870	6	4.300x4.750	414	2400	113.58	1000	109.32	88.13	6.47	9576	15.54	10.53	10.64	10.07	8.65
Farmall 1066 Turbo	1081	Die.	15170	3025	6	4.300x4.750	414	2400	116.23	1000	112.18	103.95	6.30	11625	16.52	11.47	13.16	12.02	10.13
Int. 1066 Turbo Diesel	1124	Die.	15260	1945	6	4.300x4.750	414	2600	125.68	1000	119.20	108.87	7.03	1300	16.37	11.32	12.78	11.97	9.99
1086 w/Radial Tires	1247	Die.	15640	2925	6	4.300x4.375	414	2400	131.41	1000	133.67	115.82	7.40	13503	16.39	11.90	13.28	12.36	10.45
1086 w/Bias Ply Tires	1247	Die.	15640	3100	6	4.300x4.375	414	2400	131.41	1000	133.67	114.14	6.66	12137	16.39	11.90	12.83	12.08	10.52
1456	1048	Die.	17350	2296	6	4.321x4.625	407	2400	131.80	1000	127.27	118.35	5.00	12558	16.67	12.11	13.46	12.53	10.60
Farmall 1466 Turbo	1080	Die.	16230	2750	6	4.300x5.000	436	2400	133.40	1000	125.17	119.14	6.78	13165	16.86	12.30	13.92	12.85	10.96
Int. 1466 Turbo Diesel	1125	Die.	16660	2990	6	4.300x5.000	436	2600	145.77	1000	145.84	127.02	6.93	13673	17.03	11.83	13.03	12.01	10.35
Farmall 1468	1118	Die.	16310	2850	8	4.500x4.313	550	2600	145.49	1000	136.85	129.31	7.33	12932	15.93	12.40	13.87	13.22	11.17
Int'l 1566 Turbo Dsl	1174	Die.	18260	3065	6	4.300x5.000	436	2600	161.01	1000	162.31	140.35	5.64	15774	16.16	11.51	12.55	11.69	9.86
Int'l 1568 Diesel	1175	Die.	17350	2400	8	4.500x4.313	550	2600	150.70	1000	147.79	133.79	5.69	14918	14.99	12.08	13.00	12.59	10.80
1586 w/Radial Tires	1248	Die.	17600	2480	6	4.300x5.000	436	2500	161.55	1000	156.09	140.65	5.55	16665	16.51	12.28	13.02	12.38	10.51
1586 w/Bias Ply Tires	1248	Die.	17600	3010	6	4.300x5.000	436	2500	161.55	1000	156.09	140.08	6.05	15124	16.51	12.28	12.74	12.38	10.54
3388 Diesel	1319	Die.	17850	430	6	4.300x5.000	436	2400	130.61	1000	128.59	114.42	6.67	16764	16.85	12.00	13.52	12.17	10.09
3588 Diesel	1320	Die.	18890	1270	6	4.300x5.350	466	2400	150.41	1000	152.07	130.94	6.65	17589	16.98	12.19	13.13	12.20	10.30
Int'l. 4166	1116	Die.	20010	3685	6	4.300x5.000	436	2400	150.63	1000	152.72	130.57	5.92	19434	16.84	11.86	13.01	11.88	9.93
Int'l. 4366 Turbo D	1153	Die.	23000	1310	6	4.300x5.350	466	2600	....	....	....	168.90	6.65	23138	....	....	12.54	11.98	10.34
4386 Diesel	1256	Die.	24930	None	6	4.300x5.350	466	2600	....	....	....	176.02	8.71	23321	....	....	12.43	11.92	10.18
4568	1216	Die.	29870	4120	8	5.3125x4.50	798	2600	....	....	....	235.72	6.76	27995	....	....	12.89	11.79	9.73
4786 Diesel	1317	Die.	34350	4150	8	5.313x4.500	798	2600	....	....	....	265.55	4.79	33468	....	....	12.80	11.92	9.86
Kubota																			
L185	1285	Die.	3370	1430	2	3.000x3.23	45.3	2800	15.33	540	14.07	13.03	5.57	1939	13.60	10.90	10.38	10.82	9.26
L185DT	1286	Die.	3415	1283	2	3.000x3.23	45.3	2800	15.45	540	14.16	12.65	3.94	2322	13.49	11.00	10.34	10.24	8.70
L-210	1071	Die.	3610	1290	2	3.460x3.460	65.3	2700	19.10	540	16.49	14.69	5.03	2020	13.19	10.94	10.86	10.56	9.16
L225 Diesel	1145	Die.	3452	1457	3	3.000x3.200	....	2700	20.86	1000†	19.96	17.69	6.34	2015	14.25	11.12	10.71	10.78	9.36
L245	1283	Die.	3694	1498	3	3.000x3.23	68	2800	22.06	540	20.11	18.66	5.74	2067	13.98	11.07	10.74	10.70	9.16
L245DT	1284	Die.	3792	1410	3	3.000x3.23	68	2800	22.35	540	20.15	18.48	6.06	2419	14.33	11.21	10.88	10.67	9.22
L-260	1072	Die.	4020	1380	2	3.540x3.940	77.6	2600	24.11	540	22.88	19.64	5.12	2575	13.52	13.16	10.45	10.90	8.31
L285 Diesel	1198	Die.	4030	1585	4	2.992x3.228	91	2400	26.45	540	23.58	22.34	6.62	3134	14.63	12.16	11.78	12.16	10.65
Lamborghini																			
1056DT	1269	Die.	12050	1700	6	3.86x4.72	331	2220	92.13	1000	89.98	79.51	6.86	9135	15.16	13.02	12.45	12.74	10.93

Nebraska Tractor Tests Summarized (Tests from 1970 through 1979)

					ENGINE										—FUEL CONSUMPTION (HP Hours Per Gallon) @:—				
																	—Varying Drawbar Power—		
MAKE AND MODEL OF TRACTOR	Test No.	Fuel Used	Weight With Ballast	Lbs. Ballast Carried	No. of Cyl-inders	Bore and Stroke	Dis-place-ment Cu. in.	Rated RPM Dwbr.	Max. PTO HP @ Rated Engine RPM	Std. PTO RPM	Max. PTO HP @ Std. PTO RPM	Max. Draw-bar HP	MPH @ Max. Dwbr. HP	Max. Lbs. Pull	Max. PTO HP @ Std. PTO RPM	PTO Average @ Varying Power	Max. Avail-able Power	75% of Pull Max. Power	50% of Pull @ Max. Power
Leyland																			
245 Diesel	1177	Die.	7850	1970	3	3.600x5.000	152.7	2250	39.73	540	36.38	35.09	4.47	5056	16.31	12.60	13.02	12.67	11.29
255 Diesel	1176	Die.	8610	2310	4	3.822x4.826	222	2200	47.91	540	43.85	43.00	6.58	5891	16.42	11.10	12.78	11.81	9.50
2100 Diesel	1178	Die.	13260	4350	6	3.860x4.920	344.7	2100	88.40	1000	83.30	75.70	4.95	8617	16.29	13.20	13.16	13.24	11.24
Long																			
360 Diesel	1298	Die.	6410	1930	3	3.74x4.33	143	2400	36.16	540	31.06	31.91	5.20	4808	14.41	11.97	12.45	12.13	10.48
R9500 Special	1107	Die.	13700	5530	6	3.875x5.000	354	2250	97.72	540	88.13	82.94	6.13	10216	16.21	13.25	13.02	13.10	11.14
U445	1108	Die.	7800	3320	3	3.740x4.330	143	2400	41.93	540	36.53	37.55	5.51	5910	13.40	12.01	11.84	13.29	11.93
U550	1109	Die.	9110	4540	4	3.740x4.330	190.7	2400	53.61	540	47.66	48.03	7.15	6944	15.10	12.41	13.09	13.21	11.76
900 Diesel	1163	Die.	12575	4375	4	4.33x4.72	285	2200	72.88	1000	72.86	62.50	6.53	7843	13.06	12.15	10.97	13.00	11.38
Massey-Ferguson																			
MF230 Gasoline	1215	Gas.	4870	1030	4	3.375x4.062	145	2000	34.34	540	31.29	29.58	5.08	3717	11.85	8.72	9.89	8.90	7.85
MF230 Diesel	1214	Die.	5110	1110	3	3.600x5.000	153	2000	34.53	540	30.80	29.66	7.64	4030	18.18	14.81	15.06	14.74	12.87
MF235 Gasoline	1194	Gas.	5785	1655	4	3.375x4.062	145	2250	41.13	540	33.87	35.29	5.86	4294	10.49	7.99	8.69	8.07	6.69
MF235 Diesel	1187	Die.	5860	1725	3	3.600x5.000	153	2250	42.39	540	35.29	36.29	5.84	4281	16.78	13.52	13.80	13.39	11.56
MF255 Gasoline	1190	Gas.	7280	1140	4	3.875x4.500	212	2000	50.01	540	47.14	43.49	5.28	5668	10.91	8.00	8.94	8.54	6.72
245 Diesel	1251	Die.	6150	2100	3	3.600x5.000	153	2250	42.90	540	36.50	36.75	5.92	4279	16.25	12.72	12.43	12.79	11.13
245 Gasoline	1252	Gas.	6020	2120	4	3.375x4.062	145	2250	41.09	540	34.15	35.50	5.90	4298	11.74	9.07	9.50	9.07	7.88
MF255 Diesel	1189	Die.	7130	1160	4	3.600x5.000	203	2000	50.69	540	45.55	43.72	5.28	5257	15.88	13.32	13.44	13.36	12.24
255 12-Speed	1250	Die.	7310	895	4	3.875x5.000	236	2000	52.68	540	48.37	44.75	7.89	5591	16.92	12.70	13.34	12.82	11.03
MF265 Diesel	1188	Die.	8200	1815	4	3.875x5.000	236	2000	60.73	540	54.76	51.87	5.23	6248	15.88	13.44	13.52	13.51	12.16
MF275 Diesel	1193	Die.	9330	2720	4	3.975x5.000	248	2000	67.43	540	61.76	60.16	5.16	7292	14.18	12.51	13.04	13.22	11.63
MF285 Diesel	1171	Die.	11760	4110	4	4.500x5.000	318	2000	81.96	1000	81.96	70.53	7.77	8846	14.98	12.68	12.85	12.90	11.34
MF1085 Diesel	1133	Die.	14385	2845	4	4.500x5.000	318	2000	81.58	1000	81.58	70.76	5.58	10355	15.82	13.21	13.43	13.15	11.55
MF1105 Diesel	1132	Die.	16725	4405	6	3.875x5.000	354	2200	100.72	1000	96.43	86.26	4.36	7415	15.43	11.53	12.37	11.55	9.81
MF1135 Diesel	1135	Die.	18900	5350	6	3.875x5.000	354	2200	120.84	1000	118.47	106.52	4.56	13955	16.18	12.24	13.22	12.56	10.71
MF1150	1049	Die.	22625	4578	8	4.250x4.500	510.7	2200	135.60	1000	128.78	123.96	6.06	17260	15.20	12.50	13.49	13.37	11.31
MF1155 Diesel	1134	Die.	20460	5554	8	4.250x5.000	540	2200	140.97	1000	134.11	124.90	4.40	15630	15.66	12.77	13.15	13.00	11.45
MF1500	1086	Die.	20555	3355	8	4.500x4.500	573	3000	....	....	....	152.77	5.30	17295	....	....	12.99	12.49	10.90
MF1505 Diesel	1172	Die.	20970	3010	8	4.500x5.000	636	2800	174.46	1000	175.95	154.10	6.98	17226	14.55	11.41	12.27	11.43	9.54
MF1800	1087	Die.	21760	4430	8	4.500x5.000	636	2800	....	....	....	183.65	7.07	18432	....	....	13.27	13.49	11.93
MF1805 Diesel	1173	Die.	22790	4790	8	4.500x5.000	636	2800	192.65	1000	191.60	170.17	6.95	18781	14.77	12.14	12.76	12.41	10.77
2675, 8-Speed	1321	Die.	14280	1930	6	3.875x5.0	354	2500	100.84	1000	95.00	86.18	5.91	10226	15.00	11.14	11.48	11.57	10.01
2675, 24-Speed	1309	Die.	14465	2065	6	3.875x5.0	354	2500	103.29	1000	96.67	86.99	7.21	9674	15.43	11.56	11.76	11.49	9.95
2705, 8-Speed	1322	Die.	16800	4295	6	3.875x5.0	354	2500	121.00	1000	114.44	101.47	6.17	12588	16.84	11.22	12.54	11.30	9.45
2705, 24-Speed	1310	Die.	17490	4895	6	3.875x5.0	354	2500	122.20	1000	115.85	103.02	7.50	13085	16.65	11.22	12.74	11.27	9.23
2745 Diesel	1311	Die.	19490	4300	8	4.25x4.75	539	2600	143.40	1000	132.21	123.37	7.78	15386	15.40	10.62	11.96	11.13	9.39
MF2775	1278	Die.	20400	4210	8	4.63x4.75	640	2600	165.95	1000	149.86	143.70	5.72	17407	16.05	11.50	12.57	11.52	9.85
2805 24-Speed	1258	Die.	21170	5540	8	4.630x4.750	640	2500	194.62	1000	181.77	160.72	7.10	17369	16.29	11.33	12.21	11.14	9.27
Minneapolis-Moline																			
G955	1161	Die.	12060	None	6	4.375x5.000	451	1800	98.38	1000	98.82	83.40	5.44	8374	13.92	11.93	11.26	11.76	10.29
G1350	1069	Die.	20540	8490	6	4.750x5.500	585	2200	141.44	1000	128.10	125.29	5.70	15620	15.23	12.16	12.33	12.23	10.86
G1355 Diesel	1141	Die.	18070	974	6	4.750x5.500	585	2200	146.62	1000	146.62	128.95	7.89	14178	15.21	12.47	13.61	12.85	11.23
A4T-1600	1070	Die.	19850	None	6	4.750x5.500	585	2200	143.27	1000	125.38	129.48	6.77	18236	14.14	11.76	12.56	12.24	10.79
Oliver																			
1655	1042	Gas.	10850	3070	6	3.750x4.000	265	2200	70.27	994	70.27	58.48	6.46	8519	10.07	8.02	8.84	8.12	6.97
1655	1041	Die.	11100	2120	6	3.875x4.000	283	2200	70.57	994	70.57	61.90	4.14	9097	14.00	12.33	12.32	12.54	11.28
1755	1056	Gas.	13070	3582	6	3.875x4.000	283	2400	86.98	984	86.98	74.93	8.23	10407	11.37	8.63	9.45	8.34	7.69
1755	1057	Die.	13250	3560	6	3.875x4.375	310	2400	86.93	984	86.93	76.38	4.05	10549	13.00	11.65	11.14	12.05	9.15

1865	1040	Die.	14800	3662	6	3.875x4.375	310	2400	98.60	984	98.60	84.30	4.65	11487	15.84	12.56	13.30	12.23	10.48
1955	1065	Die.	16220	4976	6	3.875x4.375	310	2400	108.16	984	108.16	92.85	8.24	12639	15.78	12.85	12.99	12.62	11.13
2155 .1	1069	Die.	20640	8490	6	4.750x5.500	585	2200	141.44	1000	128.10	125.29	5.70	15620	15.23	12.16	12.33	12.23	10.86
2255 Diesel	1140	Die.	17990	1583	8	4.500x4.500	573	2600	146.72	1000	147.65	126.13	5.70	14770	15.66	12.47	13.43	12.95	11.25
2655	1070	Die.	19850	None	6	4.750x5.500	585	2200	143.27	1000	125.38	129.48	6.77	18236	14.14	11.76	12.56	12.24	10.79
Same																			
Panter 4WD Diesel	1185	Die.	12000	2772	5	3.860x4.720	276	2200	80.02	1000	79.10	66.67	5.75	10389	14.79	12.74	12.40	12.30	10.00
Tiger 1000	1268	Die.	11620	2500	5	4.13x4.72	317	2200	90.45	1000	89.42	78.84	6.35	9116	15.48	13.22	12.41	13.08	11.26
Buffalo 4WD Diesel	1186	Die.	13795	3708	6	4.130x4.720	380	2200	104.94	1000	104.94	88.24	4.24	10941	15.23	12.78	12.47	12.44	10.76
Satoh																			
S650G	1106	Gas.	3640	1400	4	2.677x2.677	60.2	2800	22.03	1000†	20.37	18.78	3.96	2794	9.91	8.38	8.55	9.03	7.88
Steiger																			
Wildcat III ST-210 &RC-210	1237	Die.	22260	None	8	4.500x5.000	636	2800	....	....	....	171.44	5.64	21052	....	....	12.71	12.58	10.82
Bearcat	1079	Die.	22650	2086	8	4.500x5.000	636	2800	....	....	....	165.64	5.76	21287	....	....	12.91	12.46	11.04
Bearcat II	1162	Die.	23020	1585	8	4.500x5.000	636	2800	....	....	....	180.69	6.57	22622	....	....	12.79	12.37	10.92
Bearcat III ST-220	1246	Die.	29380	None	6	5.500x6.000	855	2100	....	....	....	175.58	4.84	26936	....	....	13.24	12.60	11.04
Bearcat III PT225	1272	Die.	30825	None	6	4.75x6.00	638	2200	(1)	....	....	180.86	6.33	29749	....	....	12.02	10.80	9.29
Bearcat III 225 without PTO												187.59	5.58	29953	....	....	12.81	11.52	10.07
Cougar II	1170	Die.	27995	1305	6	4.750x6.000	638	2200	....	....	....	228.15	4.44	26432	....	....	13.15	12.77	11.59
Cougar III ST-250	1239	Die.	29800	None	6	4.750x6.000	638	2200	....	....	....	210.35	6.38	26612	....	....	12.74	11.90	10.36
Cougar III ST-251	1233	Die.	30840	None	6	5.500x6.000	855	2100	....	....	....	205.82	7.98	26880	....	....	14.74	13.69	11.60
Cougar III PT270	1273	Die.	32210	1495	6	4.75x6.00	638	2200	(1)	....	....	219.39	6.29	30122	....	....	12.73	11.81	10.23
Cougar III 270 without PTO												224.54	4.89	29950	....	....	12.97	12.45	10.76
Cougar III ST-270	1238	Die.	29930	None	6	4.750x6.000	638	2200	....	....	....	228.96	6.38	25731	....	....	13.32	12.62	10.96
Panther III ST-310	1235	Die.	30850	None	6	5.500x6.000	855	2100	....	....	....	261.78	7.90	26757	....	....	13.95	13.09	11.02
Panther III ST-325	1236	Die.	31080	None	6	5.400x6.500	893	2100	....	....	....	281.94	7.93	28189	....	....	14.82	14.19	12.64
Panther III PT350	1274	Die.	34000	2855	8	5.5x4.75	903	2600	(1)	....	....	305.48	6.51	[illegible]	....	....	14.91	13.75	11.32
Panther III 350 without PTO												311.64	7.38	[illegible]	....	....	15.03	Not Tested	
Tiger II	1169	Die.	22930	2330	8	5.500x4.750	903	2600	....	....	....	270.21	6.73	28097	....	....	13.88	12.70	10.61
Tiger III ST450	1282	Die.	47370	4645	6	6.25x6.25	1150	2109	....	....	....	385.74	5.23	42715	....	....	15.57	Not Tested	

(1) Equipped with controlled hydrostatic pto with 105 output horsepower at 1000 rpm.

Versatile																			
555 Diesel	1331	Die.	25980	6330	8	4.625x4.125	555	2550	184.35	1000	184.35	157.30	4.05	23882	16.33	11.15	12.96	11.17	8.83
875 Diesel	1332	Die.	29480	4160	6	5.5x6.0	855	1750	247.16	1000	247.16	242.03	6.36	26795	16.06	12.02	14.35	12.53	10.34
White																			
2-50 Field Boss	1231	Die.	6880	2325	3	3.940x4.330	158	2500	47.02	540	43.94	41.88	4.80	5640	15.80	13.03	13.26	13.49	11.97
2-60 Field Boss	1232	Die.	8990	3830	4	3.940x4.330	211	2400	63.22	540	54.35	54.78	5.07	7352	17.63	13.82	14.40	13.87	11.93
2-70 Diesel	1212	Die.	9630	1000	6	3.875x4.000	283	[illegible]	70.71	1000	70.71	59.47	6.40	7550	14.56	12.28	11.92	12.13	10.72
2-85 Diesel	1213	Die.	12280	580	6	3.875x5.000	354	2200	85.54	1000	85.54	71.93	8.13	9309	[illegible]	11.72	12.24	11.74	9.71
2-105 Field Boss	1181	Die.	11810	None	6	3.875x5.000	354	2200	105.61	1007	105.61	90.81	6.34	9212	15.76	12.02	12.89	11.95	10.00
2-135	1275	Die.	16360	2225	6	4.56x4.87	478	2200	137.64	1000	138.03	[illegible]	8.93	11907	14.91	11.38	12.31	11.42	9.73
2-150 Field Boss	1182	Die.	16940	None	6	4.750x5.500	585	2200	147.49	1007	147.49	127.49	5.63	15059	14.46	11.90	12.07	12.14	10.63
4-150 Field Boss	1159	Die.	16960	None	8	4.500x5.000	636	2800	151.87	1000	152.45	133.34	6.34	16925	15.09	11.45	12.46	11.34	9.21
2-155	1276	Die.	16650	None	6	4.56x4.87	478	2200	157.73	1000	162.37	139.68	9.04	14512	15.38	11.91	12.69	11.53	9.97
2-180	1287	Die.	18280	None	8	4.5x5.0	636	2800	181.89	1000	181.89	163.64	6.50	15499	14.38	11.86	12.85	12.48	10.56
4-180 Field Boss	1184	Die.	20600	None	8	4.500x5.000	636	2800	181.07	1000	182.30	156.54	4.59	20469	14.19	11.47	11.79	11.56	9.98
4-210 Field Boss	1318	Die.	23735	None	8	4.5x5.0	636	2800	182.44	1000	182.44	162.25	5.89	22934	14.26	11.53	12.34	12.10	10.25
Yanmar																			
YM240 Diesel	1199	Die.	3305	1355	2	3.543x3.543	70	2400	19.76	540	18.75	16.60	4.86	2442	15.06	12.64	12.35	11.95	10.37

†See complete test for data @ 540 rpm.

NOTE

ONLY THE FOLLOWING PAGES OF THIS PUBLICATION

HAVE BEEN FILMED

Cover 1, p. 3,
12, 15-16,
26-27, 44-
46, 48.